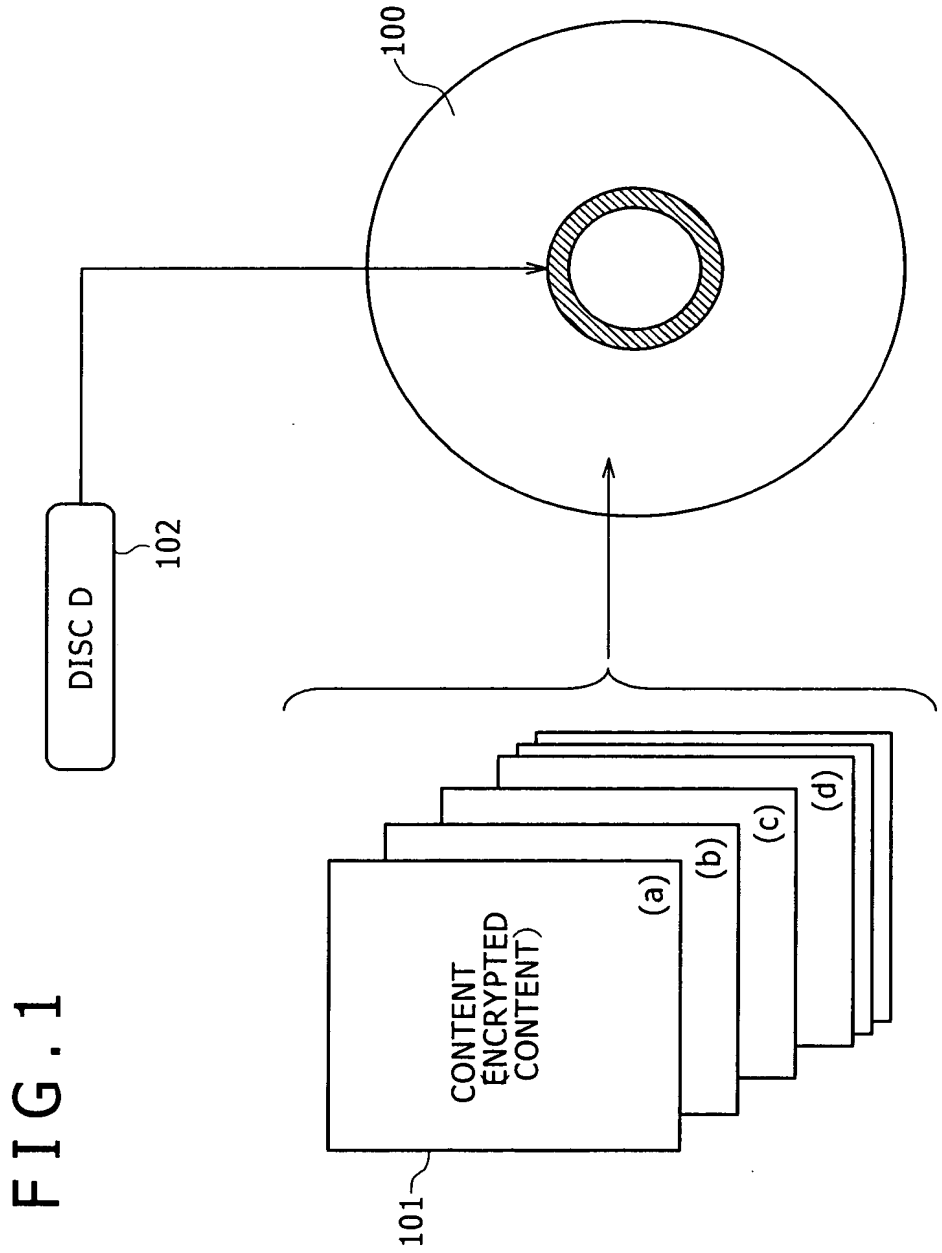


FIG. 1

FIG. 2

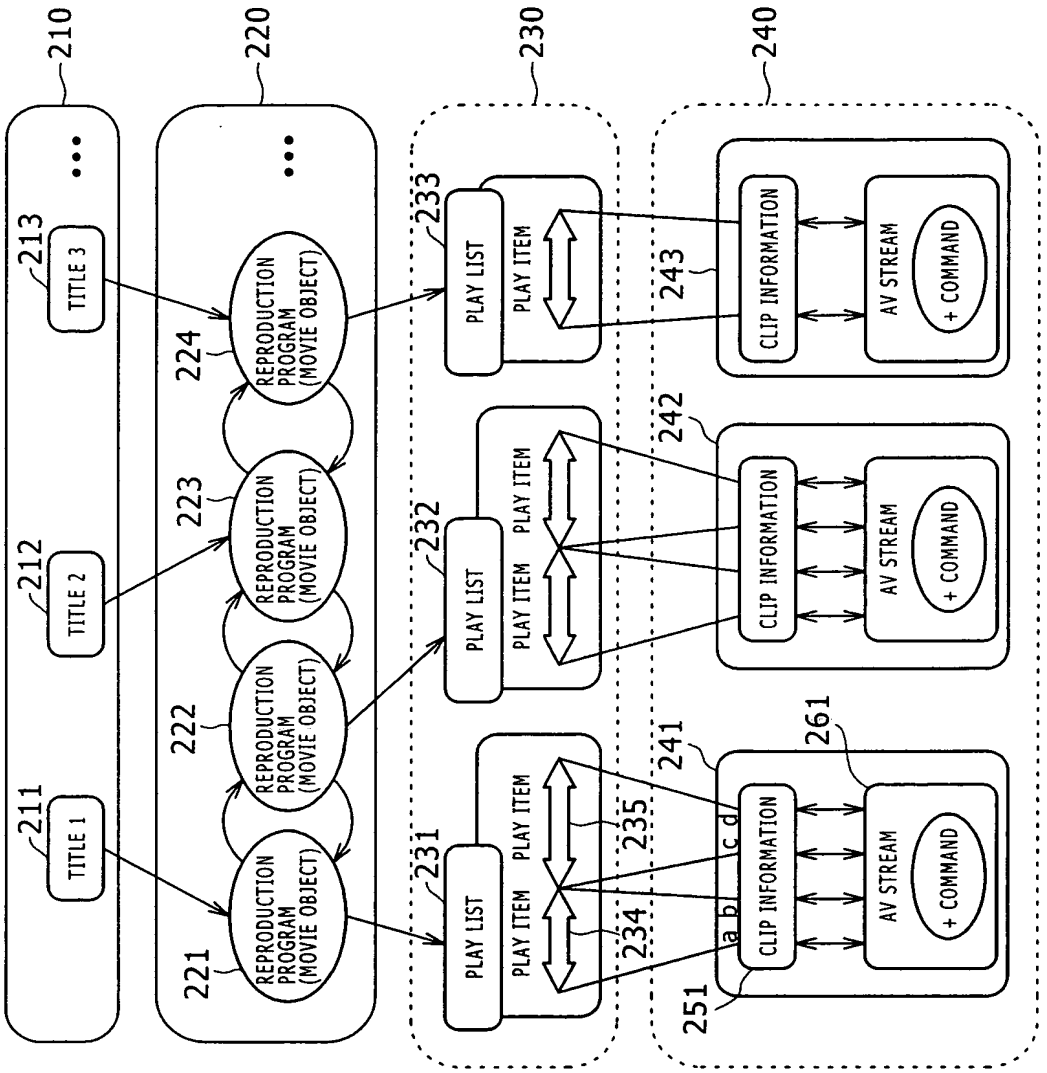

(A)
INDEX (TITLE)
(B)
REPRODUCTION PROGRAM
(MOVIE OBJECT)
(C)
REPRODUCTION SECTION
SPECIFICATION FILE
(PLAY LIST)
(D)
CLIP
(CONTENT DATA FILE)
210
211
TITLE 1
212
TITLE 2
213
TITLE 3
220
221
222
223
224
REPRODUCTION PROGRAM (MOVIE OBJECT)
230
231
232
233
PLAY LIST
PLAY ITEM
234
235
240
241
242
243
CLIP INFORMATION
AV STREAM
+ COMMAND
251
261
a b c d

FIG. 3

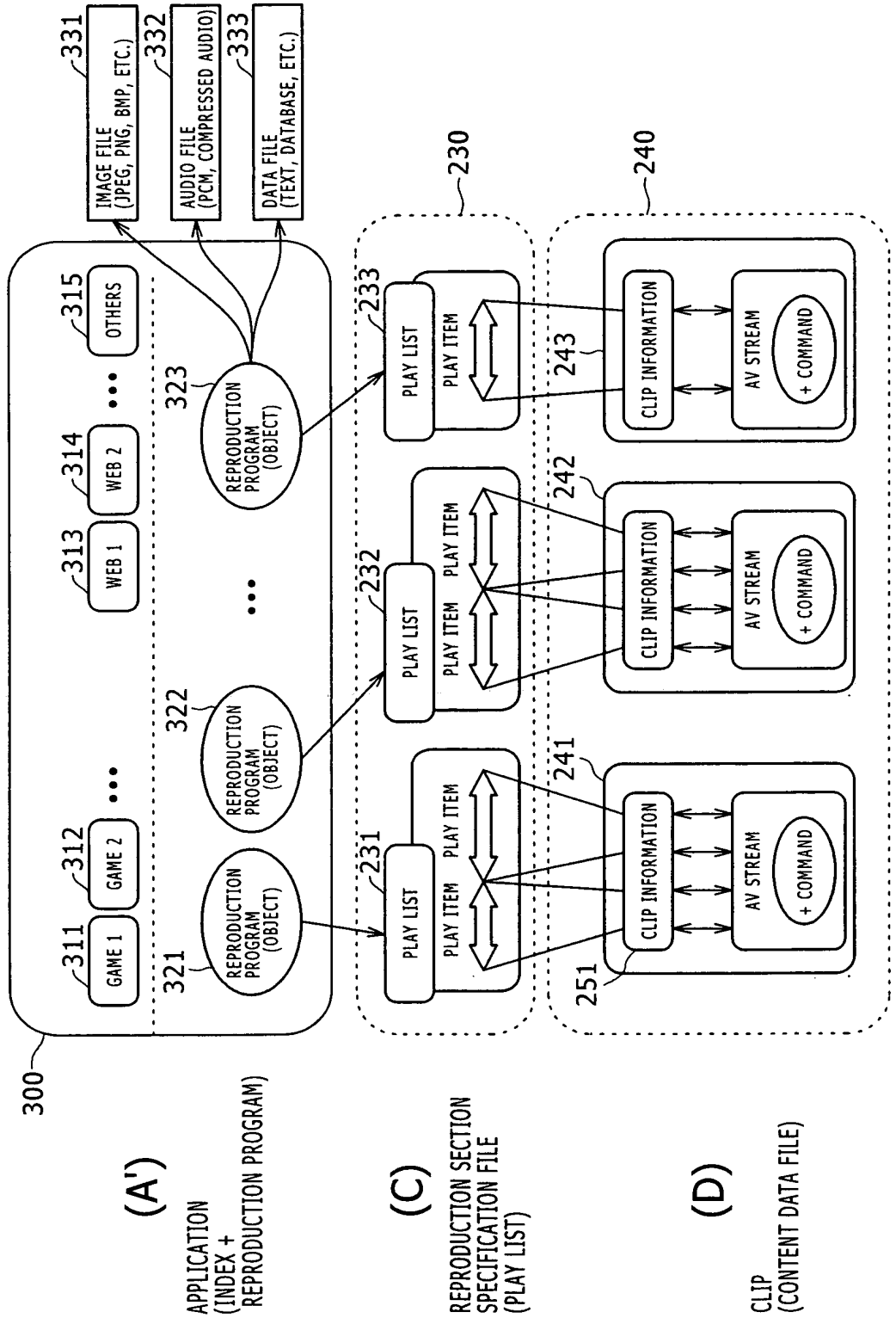

300
(A')
APPLICATION
(INDEX + REPRODUCTION PROGRAM)
311
GAME 1
312
GAME 2
313
WEB 1
314
WEB 2
315
OTHERS
321
322
323
REPRODUCTION PROGRAM (OBJECT)
331
IMAGE FILE (JPEG, PNG, BMP, ETC.)
332
AUDIO FILE (PCM, COMPRESSED AUDIO)
333
DATA FILE (TEXT, DATABASE, ETC.)
(C)
REPRODUCTION SECTION SPECIFICATION FILE (PLAY LIST)
230
231
232
233
PLAY LIST
PLAY ITEM
(D)
CLIP (CONTENT DATA FILE)
240
241
242
243
251
CLIP INFORMATION
AV STREAM
+ COMMAND

FIG. 4

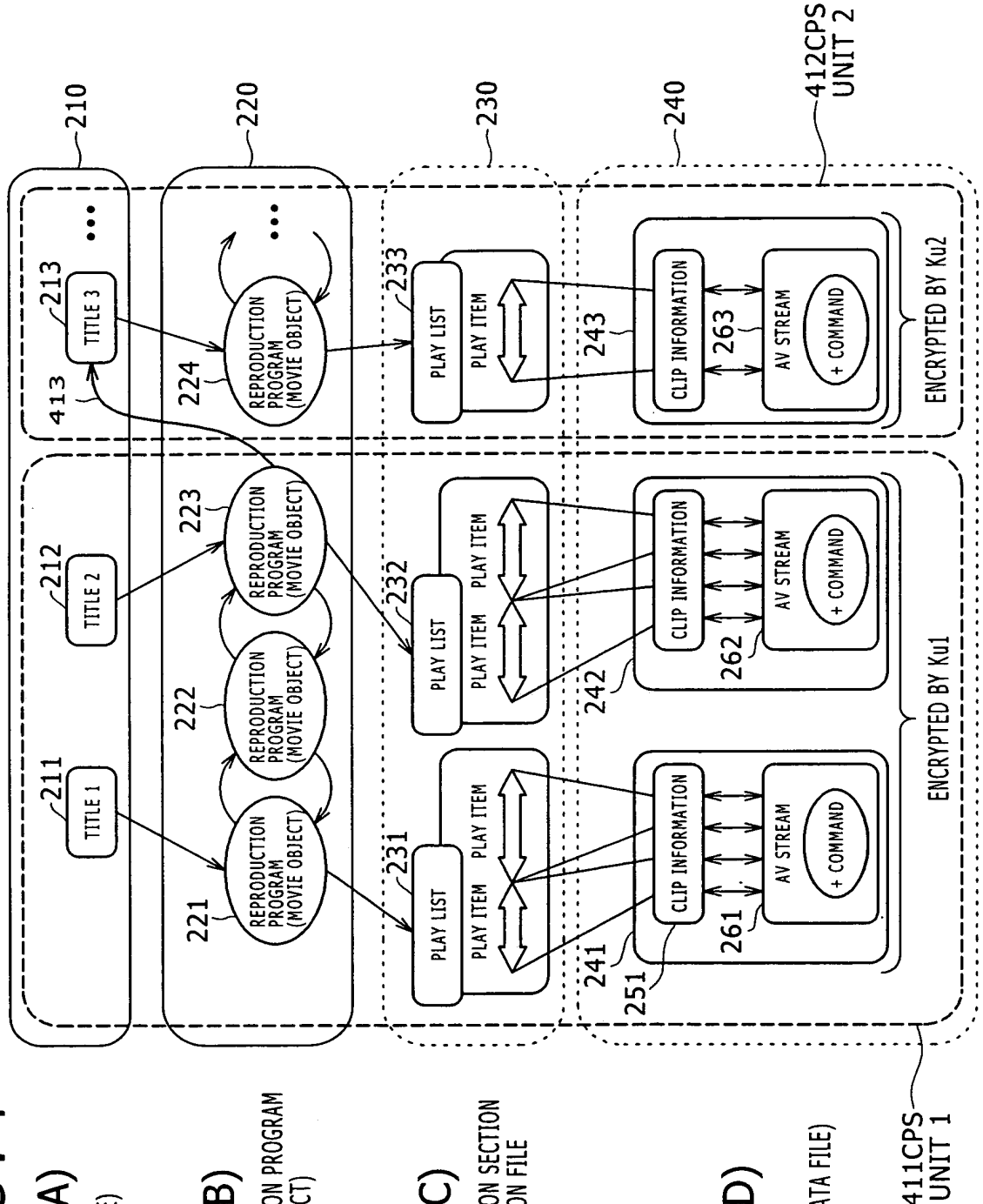
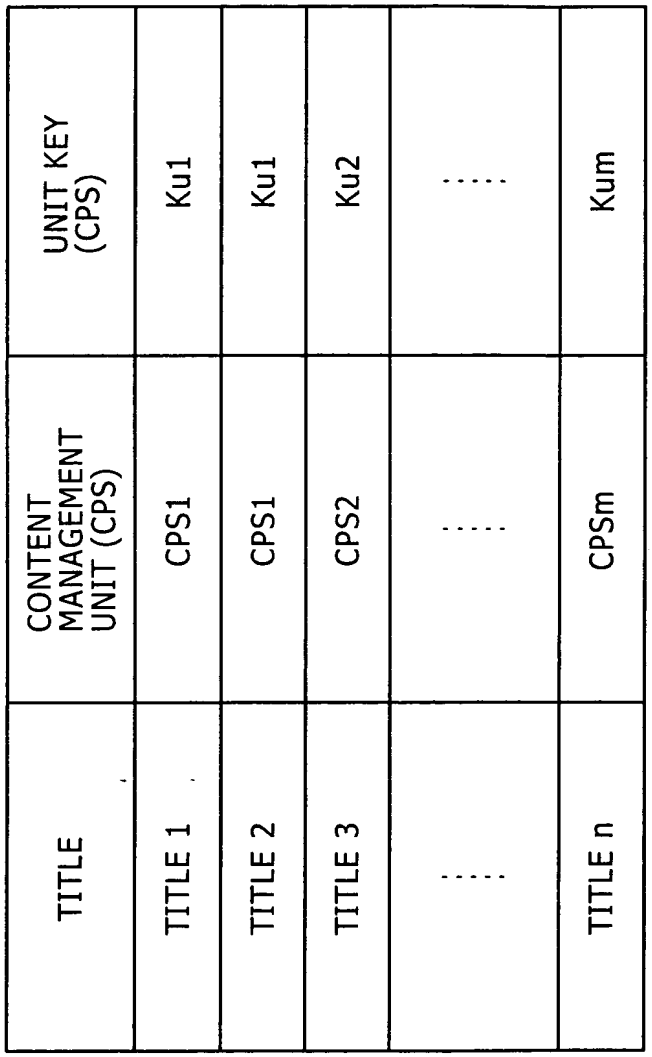

(A)
INDEX (TITLE)
(B)
REPRODUCTION PROGRAM (MOVIE OBJECT)
(C)
REPRODUCTION SECTION SPECIFICATION FILE (PLAY LIST)
(D)
CLIP (CONTENT DATA FILE)
210
220
230
240
411CPS UNIT 1
412CPS UNIT 2
TITLE 1
TITLE 2
TITLE 3
211
212
213
221
222
223
224
REPRODUCTION PROGRAM (MOVIE OBJECT)
231
232
233
PLAY LIST
PLAY ITEM
241
242
243
251
261
262
263
CLIP INFORMATION
AV STREAM
+ COMMAND
413
ENCRYPTED BY Ku1
ENCRYPTED BY Ku2

FIG. 5



TITLE	CONTENT MANAGEMENT UNIT (CPS)	UNIT KEY (CPS)
TITLE 1	CPS1	Ku1
TITLE 2	CPS1	Ku1
TITLE 3	CPS2	Ku2
.....	.....	.....
TITLE n	CPSm	Kum

FIG. 6

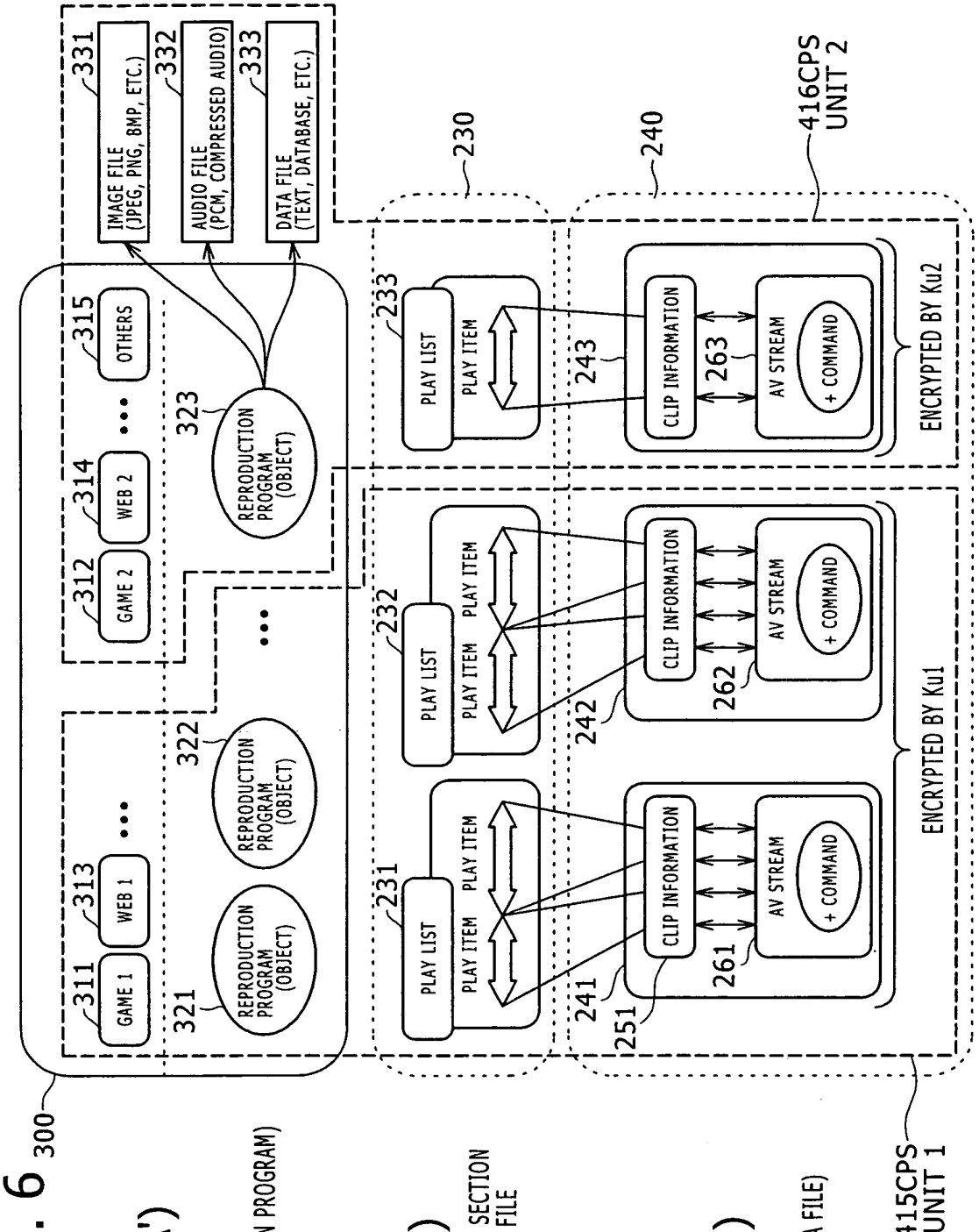

300
(A')
APPLICATION
(INDEX + REPRODUCTION PROGRAM)
311
GAME 1
313
WEB 1
312
GAME 2
314
WEB 2
315
OTHERS
321
322
323
REPRODUCTION PROGRAM (OBJECT)
331
IMAGE FILE (JPEG, PNG, BMP, ETC.)
332
AUDIO FILE (PCM, COMPRESSED AUDIO)
333
DATA FILE (TEXT, DATABASE, ETC.)
(C)
REPRODUCTION SECTION SPECIFICATION FILE (PLAY LIST)
230
231
232
233
PLAY LIST
PLAY ITEM
(D)
CLIP
(CONTENT DATA FILE)
240
241
242
243
251
261
262
263
CLIP INFORMATION
AV STREAM
+ COMMAND
ENCRYPTED BY Ku1
ENCRYPTED BY Ku2
415CPS UNIT 1
416CPS UNIT 2

FIG. 7

APPLICATION INDEX	CONTENT MANAGEMENT UNIT (CPS)	UNIT KEY (CPS)
GAME 1	CPS1	Ku1
GAME 2	CPS2	Ku2
WEB 1	CPS1	Ku1
.....	.....	.....
OTHERS n	CPSm	Kum

FIG. 8

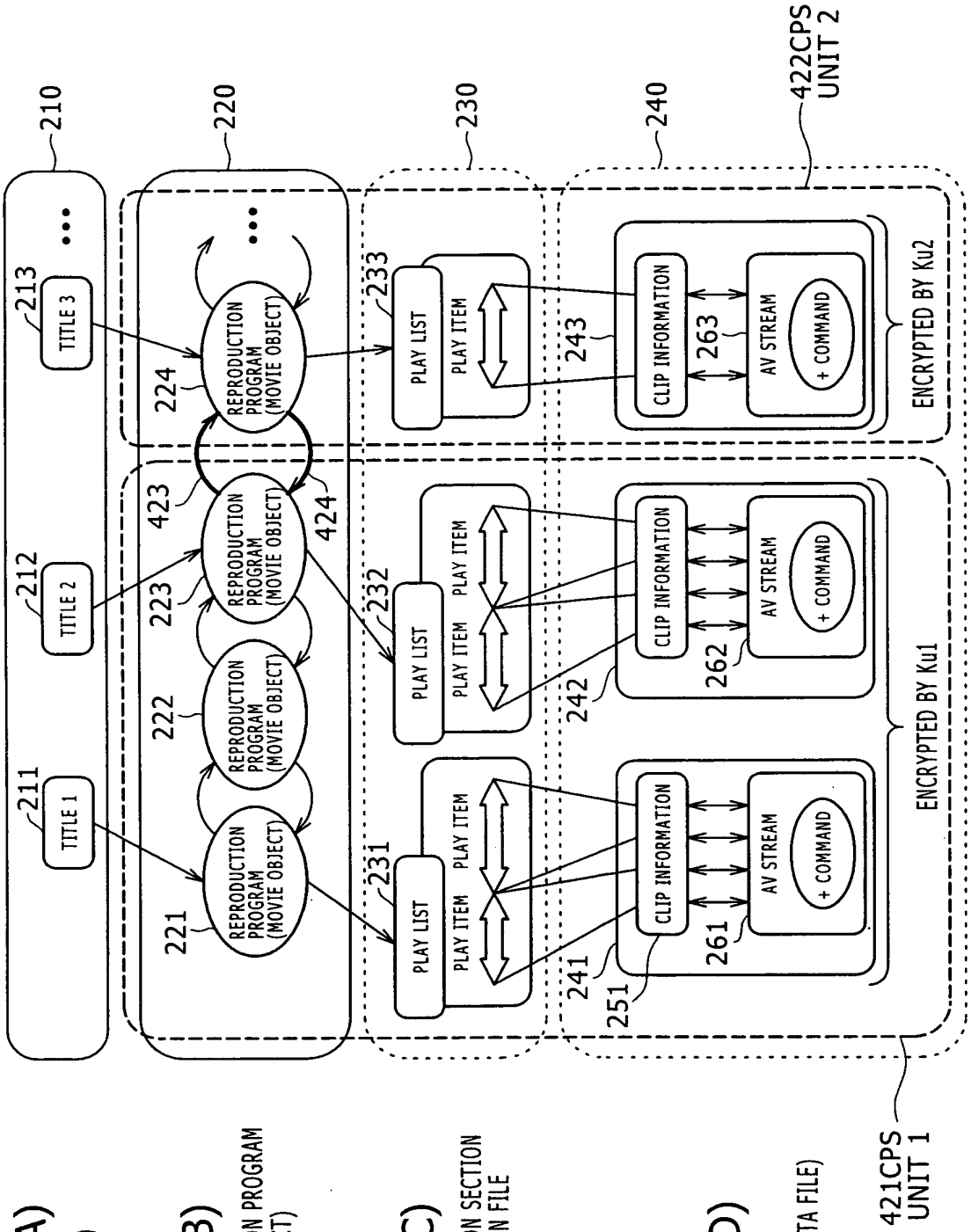

(A)
INDEX (TITLE)
(B)
REPRODUCTION PROGRAM
(MOVIE OBJECT)
(C)
REPRODUCTION SECTION
SPECIFICATION FILE
(PLAY LIST)
(D)
CLIP
(CONTENT DATA FILE)
210
211
TITLE 1
212
TITLE 2
213
TITLE 3
220
221
222
223
224
423
424
REPRODUCTION PROGRAM (MOVIE OBJECT)
230
231
232
233
PLAY LIST
PLAY ITEM
240
241
242
243
251
261
262
263
CLIP INFORMATION
AV STREAM
+ COMMAND
421CPS UNIT 1
422CPS UNIT 2
ENCRYPTED BY Ku1
ENCRYPTED BY Ku2

FIG. 9

REPRODUCTION PROGRAM (MOVIE OBJECT)	CONTENT MANAGEMENT UNIT (CPS)	UNIT KEY (CPS)
REPRODUCTION PROGRAM 1	CPS1	Ku1
REPRODUCTION PROGRAM 2	CPS1	Ku1
REPRODUCTION PROGRAM 3	CPS2	Ku2
.....	.....	.....
REPRODUCTION PROGRAM n	CPSm	Kum

FIG. 10

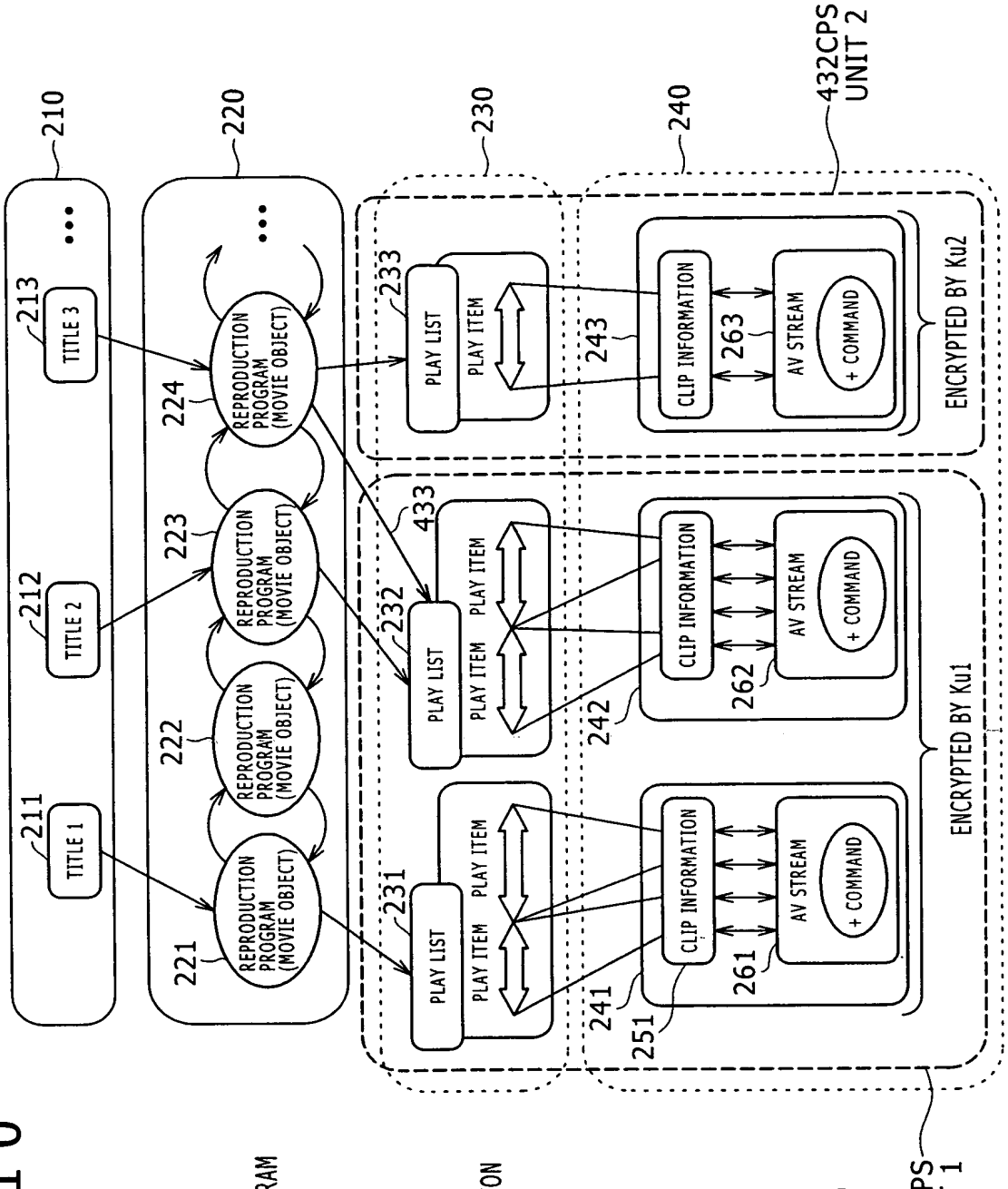

(A)
INDEX (TITLE)
(B)
REPRODUCTION PROGRAM
(MOVIE OBJECT)
(C)
REPRODUCTION SECTION
SPECIFICATION FILE
(PLAY LIST)
(D)
CLIP
(CONTENT DATA FILE)
210
211
TITLE 1
212
TITLE 2
213
TITLE 3
220
221
222
223
224
REPRODUCTION PROGRAM (MOVIE OBJECT)
230
231
232
233
PLAY LIST
PLAY ITEM
240
241
242
243
251
261
262
263
CLIP INFORMATION
AV STREAM
+ COMMAND
ENCRYPTED BY Ku1
ENCRYPTED BY Ku2
431CPS UNIT 1
432CPS UNIT 2

FIG. 11

REPRODUCTION SECTION SPECIFICATION FILE (PLAY LIST)	CONTENT MANAGEMENT UNIT (CPS)	UNIT KEY (CPS)
PLAY LIST 1	CPS1	Ku1
PLAY LIST 2	CPS1	Ku1
PLAY LIST 3	CPS2	Ku2
.....	.....	.....
PLAY LIST n	CPSm	Kum

FIG. 12

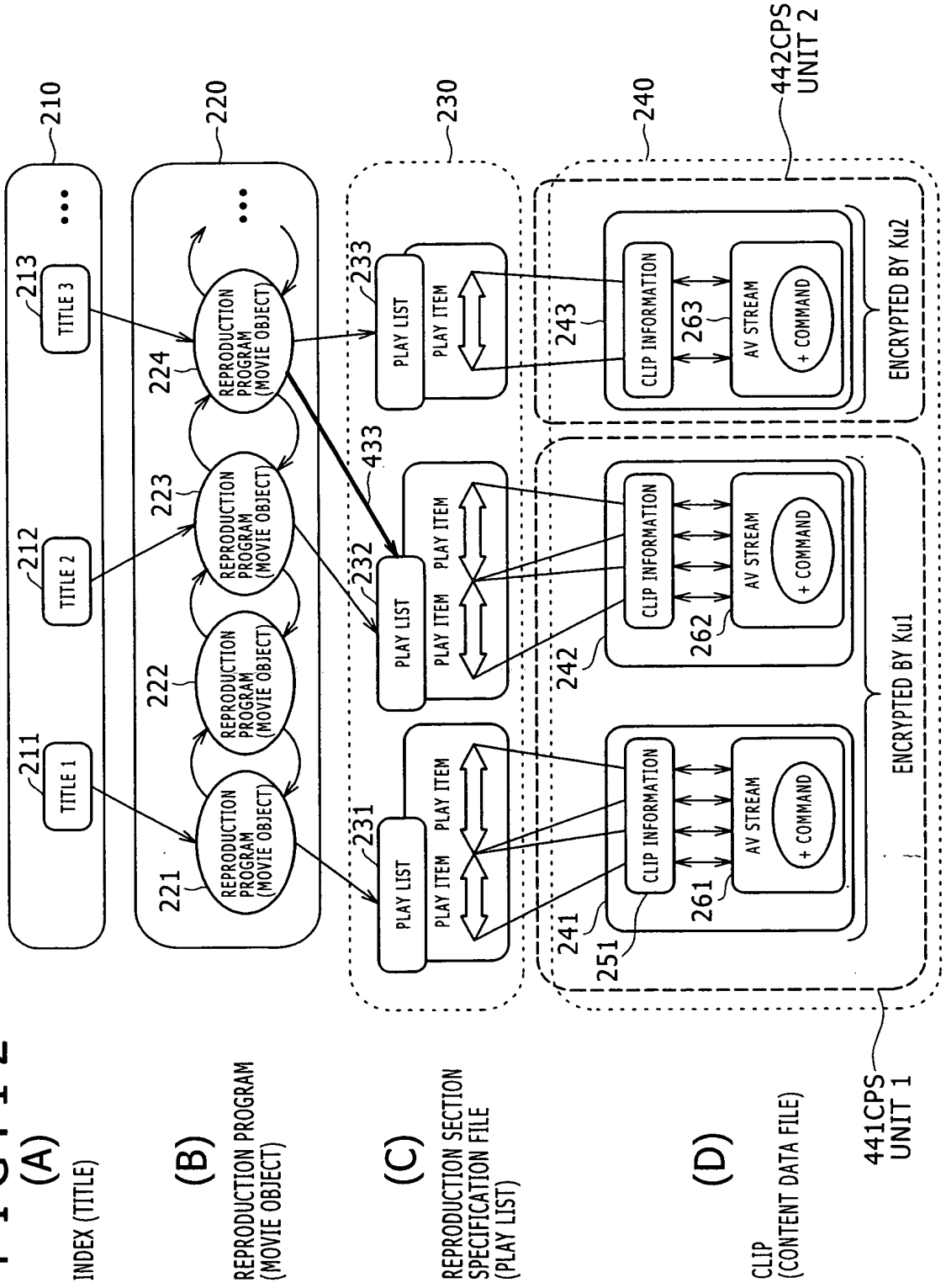

(A)
INDEX (TITLE)
(B)
REPRODUCTION PROGRAM (MOVIE OBJECT)
(C)
REPRODUCTION SECTION SPECIFICATION FILE (PLAY LIST)
(D)
CLIP (CONTENT DATA FILE)
210
211
TITLE 1
212
TITLE 2
213
TITLE 3
220
221
222
223
224
REPRODUCTION PROGRAM (MOVIE OBJECT)
230
231
232
233
433
PLAY LIST
PLAY ITEM
240
241
242
243
251
261
262
263
CLIP INFORMATION
AV STREAM
+ COMMAND
ENCRYPTED BY Ku1
ENCRYPTED BY Ku2
441CPS UNIT 1
442CPS UNIT 2

FIG. 13

CLIP	CONTENT MANAGEMENT UNIT (CPS)	UNIT KEY (CPS)
CLIP 1	CPS1	Ku1
CLIP 2	CPS1	Ku1
CLIP 3	CPS2	Ku2
.....	.....	.....
CLIP n	CPSm	Kum

FIG. 14

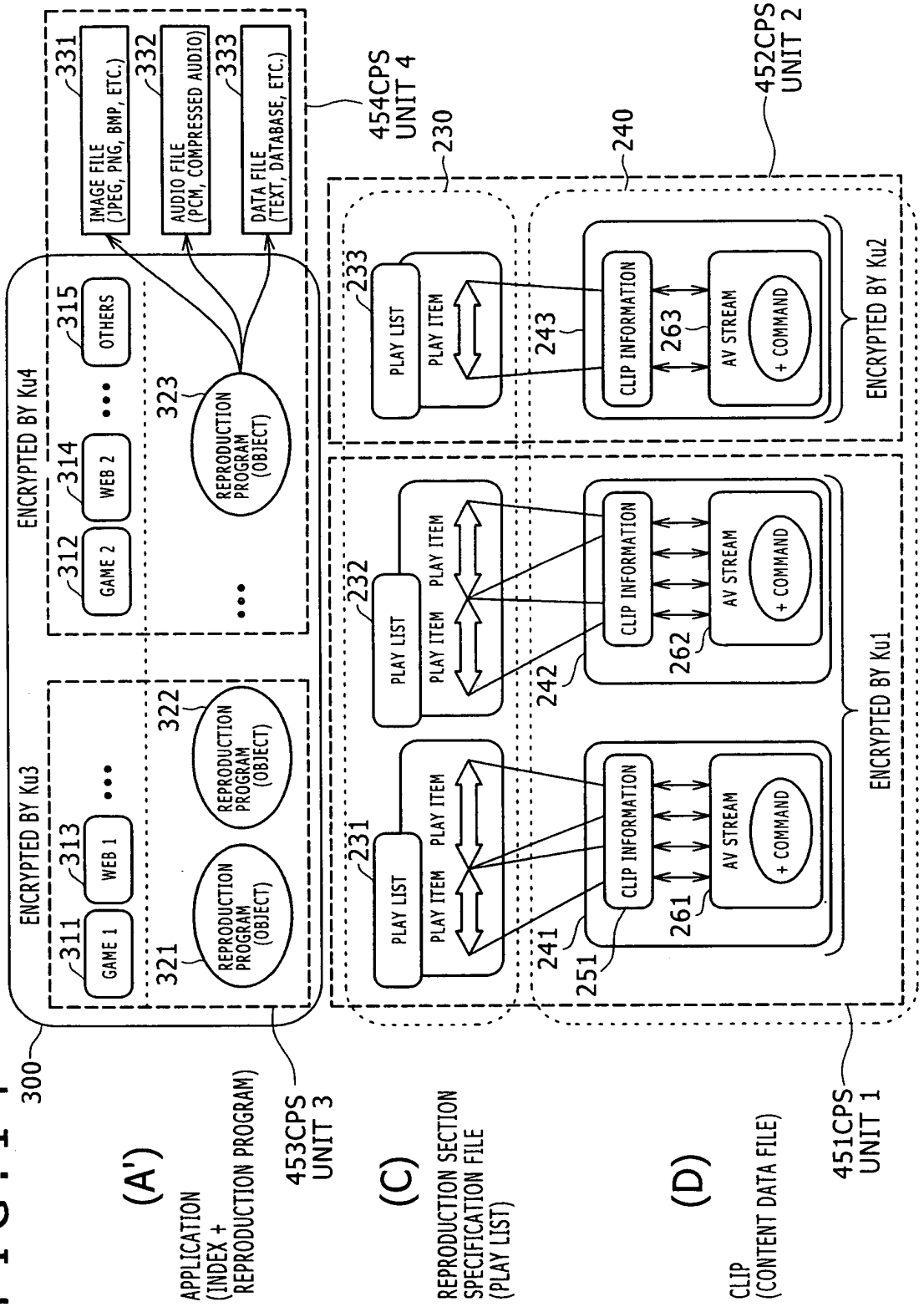

300
(A')
APPLICATION
(INDEX + REPRODUCTION PROGRAM)
453CPS UNIT 3
ENCRYPTED BY Ku3
ENCRYPTED BY Ku4
311 GAME 1
313 WEB 1
312 GAME 2
314 WEB 2
315 OTHERS
321 REPRODUCTION PROGRAM (OBJECT)
322 REPRODUCTION PROGRAM (OBJECT)
323 REPRODUCTION PROGRAM (OBJECT)
331 IMAGE FILE (JPEG, PNG, BMP, ETC.)
332 AUDIO FILE (PCM, COMPRESSED AUDIO)
333 DATA FILE (TEXT, DATABASE, ETC.)
454CPS UNIT 4
230
240
452CPS UNIT 2
(C)
REPRODUCTION SECTION SPECIFICATION FILE
(PLAY LIST)
231 PLAY LIST
PLAY ITEM
PLAY ITEM
232 PLAY LIST
PLAY ITEM
PLAY ITEM
233 PLAY LIST
PLAY ITEM
241
242
243
251
261 CLIP INFORMATION
AV STREAM
+ COMMAND
262 CLIP INFORMATION
AV STREAM
+ COMMAND
263 CLIP INFORMATION
AV STREAM
+ COMMAND
ENCRYPTED BY Ku1
ENCRYPTED BY Ku2
(D)
CLIP
(CONTENT DATA FILE)
451CPS UNIT 1

FIG. 15

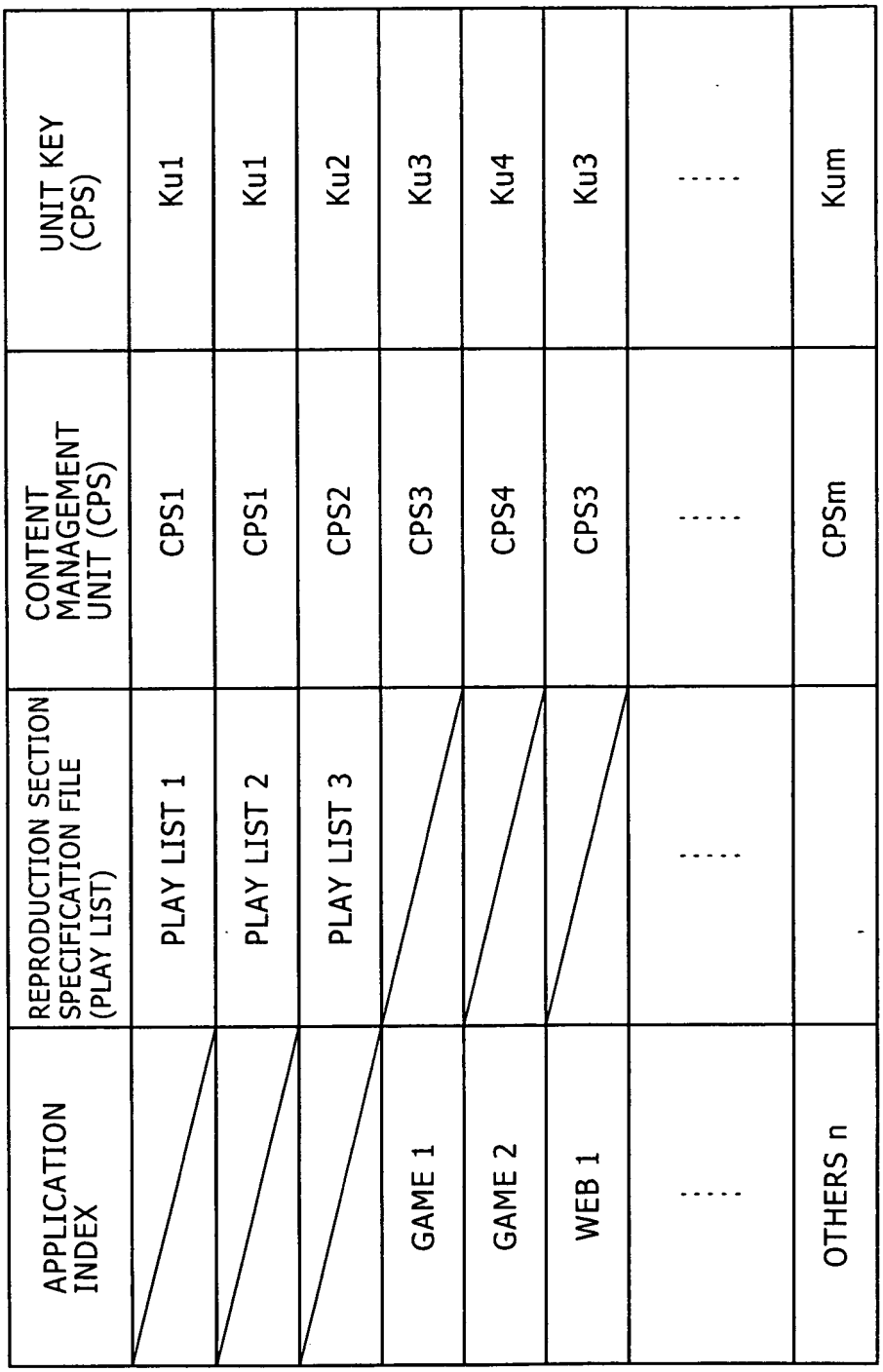

APPLICATION INDEX
REPRODUCTION SECTION SPECIFICATION FILE (PLAY LIST)
CONTENT MANAGEMENT UNIT (CPS)
UNIT KEY (CPS)
PLAY LIST 1
CPS1
Ku1
PLAY LIST 2
CPS1
Ku1
PLAY LIST 3
CPS2
Ku2
GAME 1
CPS3
Ku3
GAME 2
CPS4
Ku4
WEB 1
CPS3
Ku3
.....
.....
.....
.....
OTHERS n
CPSm
Kum

FIG. 16

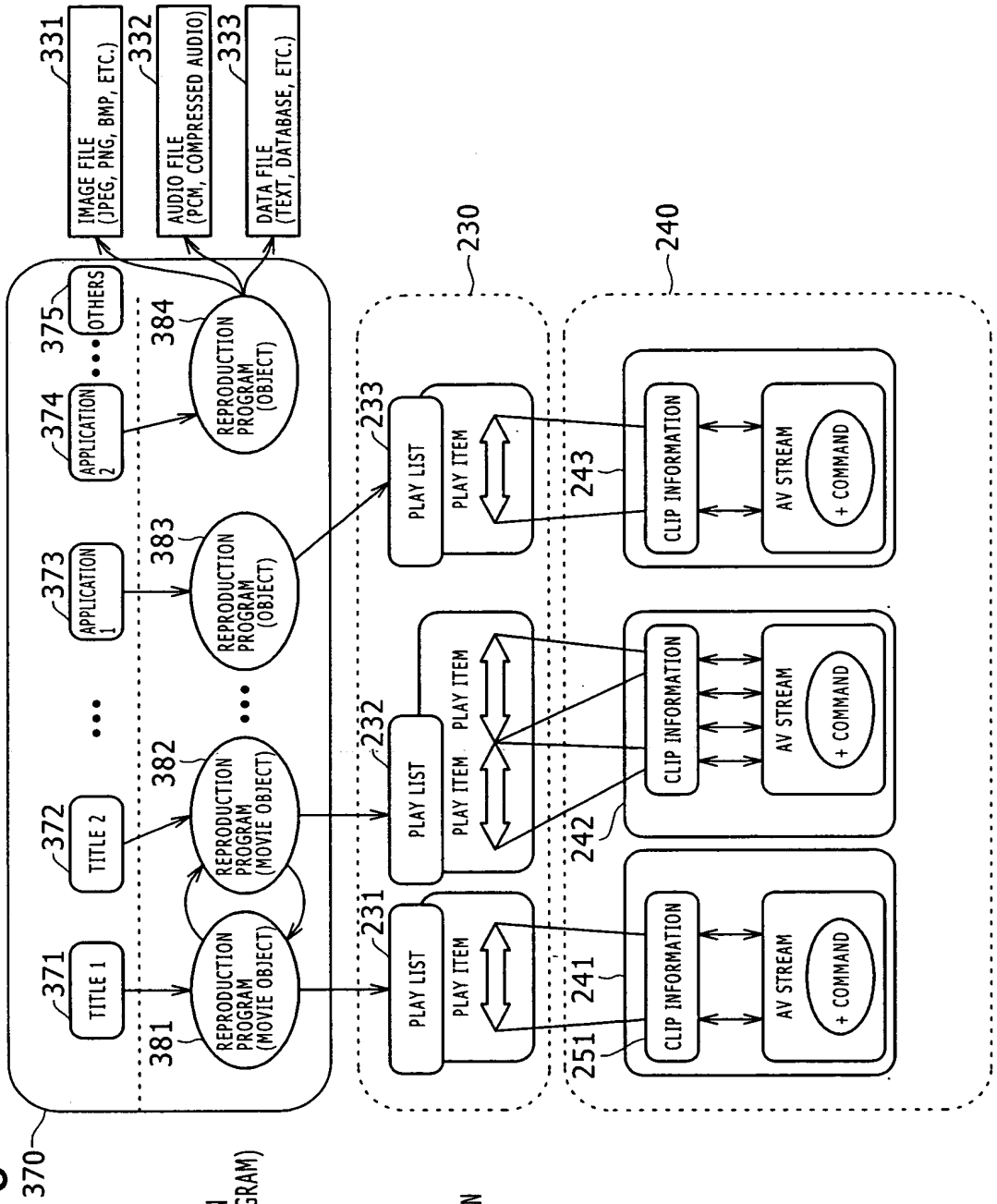

370
(A")
APPLICATION
(INDEX OR APPLICATION
+ REPRODUCTION PROGRAM)
371
TITLE 1
372
TITLE 2
373
APPLICATION 1
374
APPLICATION 2
375
OTHERS
381
REPRODUCTION PROGRAM (MOVIE OBJECT)
382
REPRODUCTION PROGRAM (MOVIE OBJECT)
383
REPRODUCTION PROGRAM (OBJECT)
384
REPRODUCTION PROGRAM (OBJECT)
331
IMAGE FILE (JPEG, PNG, BMP, ETC.)
332
AUDIO FILE (PCM, COMPRESSED AUDIO)
333
DATA FILE (TEXT, DATABASE, ETC.)
(C)
REPRODUCTION SECTION
SPECIFICATION FILE
(PLAY LIST)
230
231
PLAY LIST
PLAY ITEM
232
PLAY LIST
PLAY ITEM
PLAY ITEM
233
PLAY LIST
PLAY ITEM
(D)
CLIP
(CONTENT DATA FILE)
240
241
CLIP INFORMATION
AV STREAM
+ COMMAND
242
CLIP INFORMATION
AV STREAM
+ COMMAND
243
CLIP INFORMATION
AV STREAM
+ COMMAND
251

FIG. 17

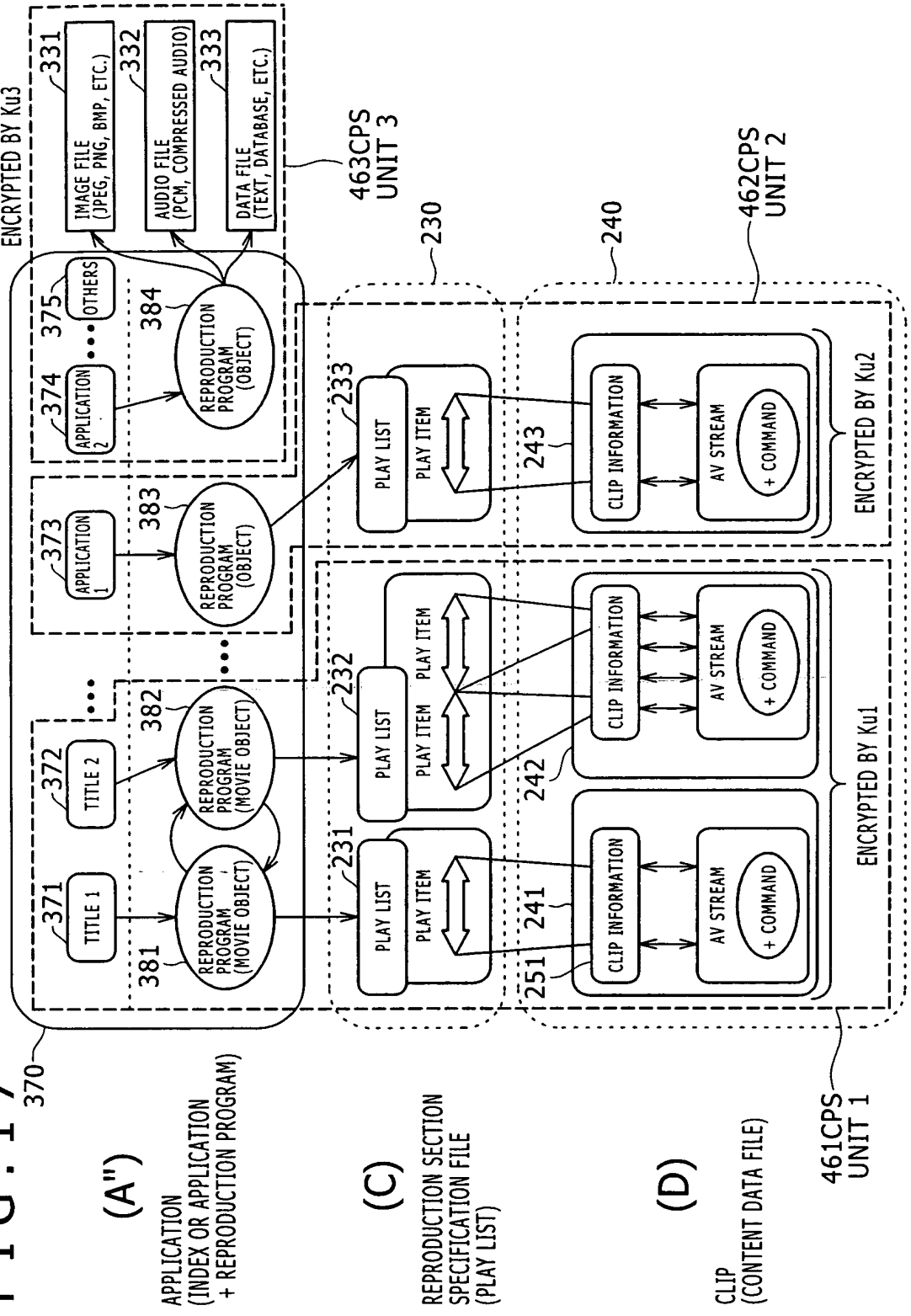

370
(A")
APPLICATION
(INDEX OR APPLICATION
+ REPRODUCTION PROGRAM)
(C)
REPRODUCTION SECTION
SPECIFICATION FILE
(PLAY LIST)
(D)
CLIP
(CONTENT DATA FILE)
ENCRYPTED BY Ku3
371
TITLE 1
372
TITLE 2
373
APPLICATION 1
374
APPLICATION 2
375
OTHERS
331
IMAGE FILE (JPEG, PNG, BMP, ETC.)
332
AUDIO FILE (PCM, COMPRESSED AUDIO)
333
DATA FILE (TEXT, DATABASE, ETC.)
381
REPRODUCTION PROGRAM (MOVIE OBJECT)
382
REPRODUCTION PROGRAM (MOVIE OBJECT)
383
REPRODUCTION PROGRAM (OBJECT)
384
REPRODUCTION PROGRAM (OBJECT)
463CPS UNIT 3
230
231
PLAY LIST
PLAY ITEM
232
PLAY LIST
PLAY ITEM
PLAY ITEM
233
PLAY LIST
PLAY ITEM
240
462CPS UNIT 2
241
242
243
CLIP INFORMATION
AV STREAM
+ COMMAND
ENCRYPTED BY Ku2
ENCRYPTED BY Ku1
251
461CPS UNIT 1

FIG. 18

INDEX OR APPLICATION FILE ON APPLICATION LAYER	CONTENT MANAGEMENT UNIT (CPS)	UNIT KEY (CPS)
TITLE 1	CPS1	Ku1
TITLE2	CPS1	Ku1
APPLICATION 1	CPS2	Ku2
APPLICATION 2	CPS3	Ku3
.....	.....	.....
OTHERS n	CPSm	Kum

FIG. 19

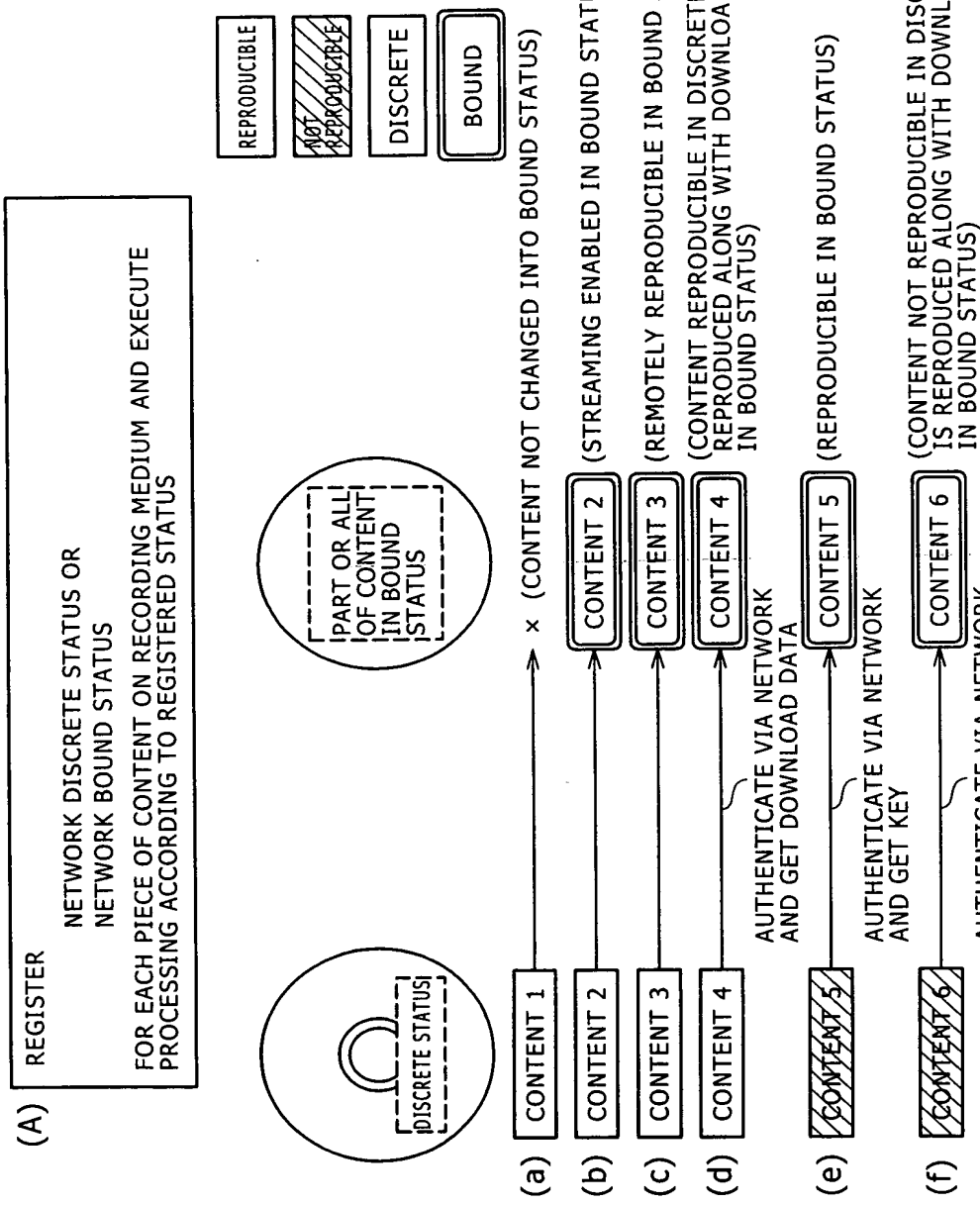

(A)
REGISTER
NETWORK DISCRETE STATUS OR NETWORK BOUND STATUS
FOR EACH PIECE OF CONTENT ON RECORDING MEDIUM AND EXECUTE PROCESSING ACCORDING TO REGISTERED STATUS
REPRODUCIBLE
NOT REPRODUCIBLE
DISCRETE
BOUND
DISCRETE STATUS
PART OR ALL OF CONTENT IN BOUND STATUS
(a) CONTENT 1
× (CONTENT NOT CHANGED INTO BOUND STATUS)
(b) CONTENT 2
(STREAMING ENABLED IN BOUND STATUS)
(c) CONTENT 3
(REMOTELY REPRODUCIBLE IN BOUND STATUS)
(d) CONTENT 4
AUTHENTICATE VIA NETWORK AND GET DOWNLOAD DATA
(CONTENT REPRODUCIBLE IN DISCRETE STATUS IS REPRODUCED ALONG WITH DOWNLOAD DATA IN BOUND STATUS)
(e) CONTENT 5
AUTHENTICATE VIA NETWORK AND GET KEY
(REPRODUCIBLE IN BOUND STATUS)
(f) CONTENT 6
AUTHENTICATE VIA NETWORK AND GET DOWNLOAD DATA
(CONTENT NOT REPRODUCIBLE IN DISCRETE STATUS IS REPRODUCED ALONG WITH DOWNLOAD DATA IN BOUND STATUS)

FIG. 20

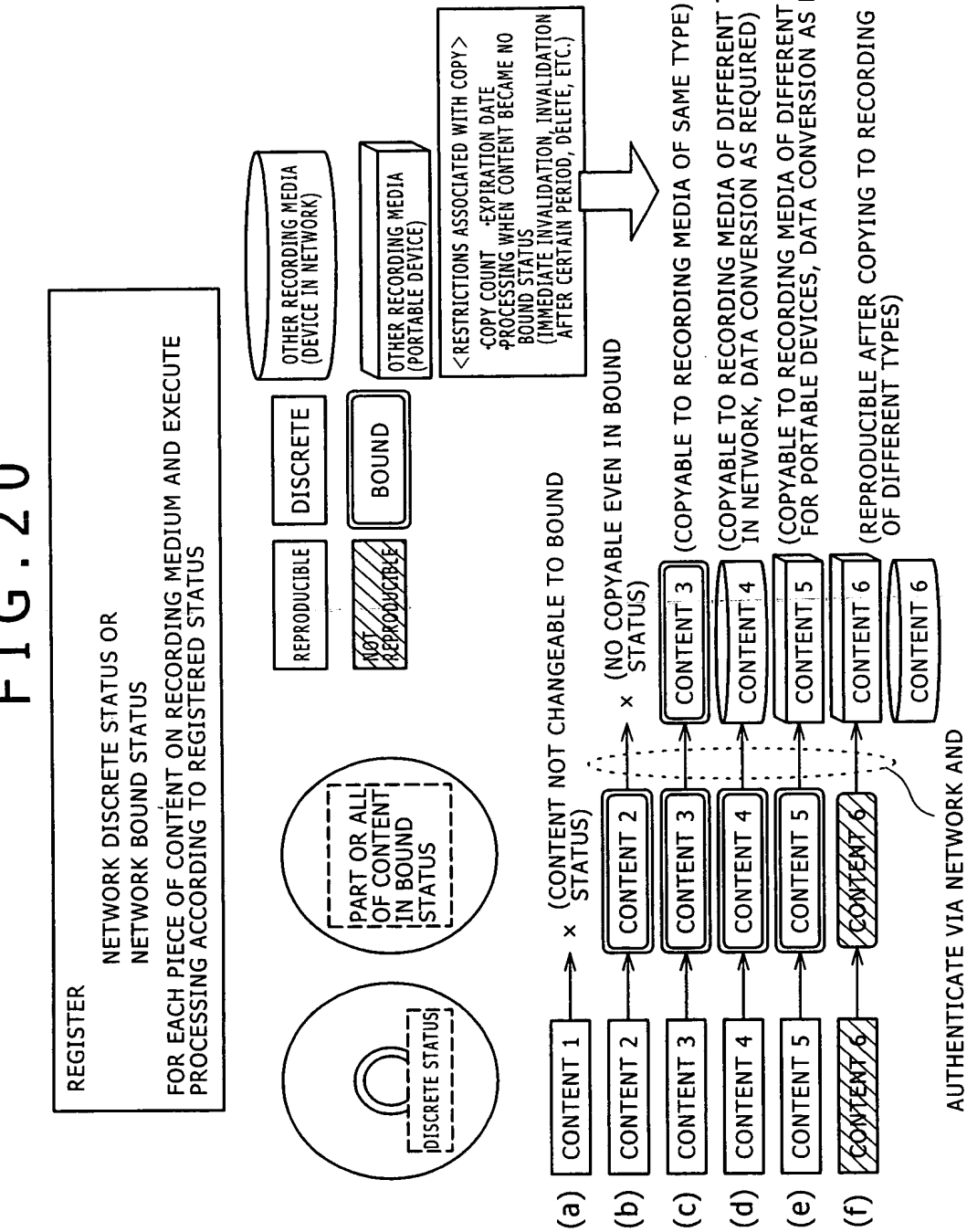

REGISTER
NETWORK DISCRETE STATUS OR NETWORK BOUND STATUS
FOR EACH PIECE OF CONTENT ON RECORDING MEDIUM AND EXECUTE PROCESSING ACCORDING TO REGISTERED STATUS
REPRODUCIBLE
DISCRETE
BOUND
NOT REPRODUCIBLE
OTHER RECORDING MEDIA (DEVICE IN NETWORK)
OTHER RECORDING MEDIA (PORTABLE DEVICE)
<RESTRICTIONS ASSOCIATED WITH COPY>
•COPY COUNT •EXPIRATION DATE
•PROCESSING WHEN CONTENT BECAME NO BOUND STATUS
(IMMEDIATE INVALIDATION, INVALIDATION AFTER CERTAIN PERIOD, DELETE, ETC.)
DISCRETE STATUS
PART OR ALL OF CONTENT IN BOUND STATUS
(a) CONTENT 1 × (CONTENT NOT CHANGEABLE TO BOUND STATUS)
(b) CONTENT 2 × (NO COPYABLE EVEN IN BOUND STATUS)
(c) CONTENT 3 (COPYABLE TO RECORDING MEDIA OF SAME TYPE)
(d) CONTENT 4 (COPYABLE TO RECORDING MEDIA OF DIFFERENT TYPES IN NETWORK, DATA CONVERSION AS REQUIRED)
(e) CONTENT 5 (COPYABLE TO RECORDING MEDIA OF DIFFERENT TYPES FOR PORTABLE DEVICES, DATA CONVERSION AS REQUIRED)
(f) CONTENT 6 (REPRODUCIBLE AFTER COPYING TO RECORDING MEDIA OF DIFFERENT TYPES)
CONTENT 6
AUTHENTICATE VIA NETWORK AND GET KEY AND DATA AS REQUIRED

FIG. 21

CONTENT MANAGEMENT UNIT (CPS)	INITIAL STATUS	CURRENT STATUS
CPS1	Discrete only	Discrete
CPS2	Discrete initially	Bound
CPS3	Bound only	Bound
CPS4	Bound initially	Discrete
.....	.....	.....
CPSm	Discrete only	Discrete

FIG.22

Field NAME	num of bits
Num_of_Content	16
for(I=0;I<Num_of_Content;I++){ CCI_and_other_info_for_Content[I] }	128

CONTENTS OF CCI_and_other_info_for_Content[I] : PART OR ALL OF THE INFORMATION SHOWN BELOW IS HELD BY FLAG OR VALUE; ANY NUMBER OF BITS MAY BE USED BY VALUE

	(FLAG/VALUE)	(CONTENTS)
<OPERATION IN DISCRETE STATUS>		
REPRODUCTION	FLAG	OK/NG
METHOD OF REPRODUCING CONTENT THAT CANNOT BE REPRODUCED IN DISCRETE STATUS	VALUE	CONNECTION TO KEY DISTRIBUTION SERVER, LOADING OF MEMORY CARD STORING KEY, ETC.
SERVER SPECIFICATION	VALUE	INDEX VALUE TO SERVER LIST
<OPERATION IN BOUND STATUS>		
COPY/STREAMING COMPATIBILITY INFORMATION	VALUE	COMPATIBILITY INFORMATION FOR REPRODUCING CONTENT BY ANOTHER DEVICE IN NETWORK
METHOD OF DATA CONVERSION AT COPY/STREAMING	VALUE	METHOD AVAILABLE WHEN CONVERTING CONTENT SO AS TO BE REPRODUCED BY ANOTHER DEVICE
COPYABILITY TO RECORDING MEDIA OF SAME TYPE IN NETWORK	FLAG	OK/NG
COPY COUNT TO RECORDING MEDIA OF SAME TYPE IN NETWORK	VALUE	NUMBER OF TIMES COPY IS MADE
EXPIRATION DATE OF COPY TO RECORDING MEDIA OF SAME TYPE IN NETWORK	VALUE	EXPIRATION DATE OF COPY
COPYABILITY TO RECORDING MEDIA OF DIFFERENT TYPE IN NETWORK	FLAG	OK/NG
COPY COUNT TO RECORDING MEDIA OF DIFFERENT TYPE IN NETWORK	VALUE	NUMBER OF TIMES COPY IS MADE
EXPIRATION DATE OF COPY TO RECORDING MEDIA OF DIFFERENT TYPE IN NETWORK	VALUE	EXPIRATION DATE OF COPY
AVAILABILITY OF DATA TO BE COPIED TO RECORDING MEDIA OF DIFFERENT TYPE IN NETWORK	FLAG	OK/NG
SPECIFICATION OF DATA TO BE COPIED TO RECORDING MEDIA OF DIFFERENT TYPE IN NETWORK	VALUE	INDEX VALUE FOR SPECIFYING DATA TO BE COPIED
COPYABILITY TO PORTABLE DEVICE	FLAG	OK/NG
COPY COUNT TO PORTABLE DEVICE	VALUE	NUMBER OF TIMES COPY IS MADE
EXPIRATION DATE OF COPY TO PORTABLE DEVICE	VALUE	EXPIRATION DATE OF COPY
AVAILABILITY OF DATA TO BE COPIED TO PORTABLE DEVICE	FLAG	OK/NG
SPECIFICATION OF DATA TO BE COPIED TO PORTABLE DEVICE	VALUE	INDEX VALUE FOR SPECIFYING DATA TO BE COPIED
PERMISSION OF STREAMING	FLAG	OK/NG
SPECIFICATION OF SUBJECT THAT RECEIVES STREAMING	VALUE	RESTRICTION OF SUBJECT DEVICES
PERMISSION OF REMOTE REPRODUCTION	FLAG	OK/NG
SPECIFICATION OF SUBJECT THAT RECEIVES REMOTE REPRODUCTION	VALUE	RESTRICTION OF SUBJECT DEVICES
PROCESSING TO BE EXECUTED WHEN CONTENT BECAME NO BOUND STATUS	VALUE	IMMEDIATE INVALIDATION, INVALIDATION AFTER CERTAIN PERIOD, OR DELETION OF COPY
DOWNLOAD DATA TYPE	VALUE	DOWNLOAD DATA TYPE (SUBTITLES, AUDIO, STILL IMAGE, ETC.)
DOWNLOAD DATA ACQUISITION METHOD	VALUE	CONNECTION TO DOWNLOAD SERVER, LOADING OF MEMORY CARD STORING DATA, ETC.
501 SPECIFICATION OF DOWNLOAD SERVER	VALUE	INDEX VALUE TO DOWNLOAD SERVER LIST
501 ACQUISITION OF OPERATION CONTROL INFORMATION FROM SERVER	FLAG	DEPEND ON OPERATION CONTROL INFORMATION ACQUIRED FROM SERVER
501 SPECIFICATION OF SERVER FOR ACQUIRING OPERATION CONTROL INFORMATION	VALUE	INDEX VALUE TO SERVER LIST INDICATIVE OF SERVER FOR ACQUIRING OPERATION CONTROL INFORMATION

FIG. 23

(A)

PUTTING ALL INFORMATION INTO ONE LOOP

Feild NAME	num of bits
Num_of_Content	16
for(I=0;I<Num_of_Content;I++){	
Num_of_function[I]	16
for(J=0;J<Num_of_function;J++){	
CCI_and_other_info_length	16
CCI_and_other_info_type	8
CCI_and_other_info_value	8
Additional_info	N
}	
}	

(B)

DIVIDING LOOP BY STATUS

Field NAME	num of bits
Num_of_Content	16
for(I=0;I<Num_of_Content;I++){	
Num_of_Discrete_function[I]	16
for(J=0;J<Num_of_function;J++){	
CCI_and_other_info_for_length	16
CCI_and_other_info_type	8
CCI_and_other_info_value	8
Additional_info	N
}	
Num_of_Bound_function[I]	16
for(J=0;J<Num_of_function;J++){	
CCI_and_other_info_length	16
CCI_and_other_info_type	8
CCI_and_other_info_value	8
Additional_info	N
}	
}	

LIST OF CCI_and_other_info_for_type AND CONTENTS OF CCI_and_other_info_value AND Additional_info

"CCI_and_other_info_type"	"CCI_and_other_info_value"	"Additional_info"
REPRODUCTION IN DISCRETE STATUS	OK/NG	METHOD OF REPRODUCING CONTENT THAT IS NOT REPRODUCIBLE IN DISCRETE STATUS SPECIFICATION OF SERVER
COPY TO RECORDING MEDIA OF SAME TYPE IN NETWORK	OK/NG	COPY COUNT, EXPIRATION DATE
COPY TO RECORDING MEDIA OF DIFFERENT TYPE IN NETWORK	OK/NG	COPY COUNT, EXPIRATION DATE, AVAILABILITY OF DATA FOR COPY, SPECIFICATION OF DATA FOR COPY, SPECIFICATION OF METHOD OF DATA CONVERSION FOR COPY
COPY TO PORTABLE DEVICE	OK/NG	COPY COUNT, EXPIRATION DATE, AVAILABILITY OF DATA FOR COPY, SPECIFICATION OF DATA FOR COPY, SPECIFICATION OF METHOD OF DATA CONVERSION FOR COPY
STREAMING IN NETWORK	OK/NG	SPECIFICATION OF DEVICE SUBJECT TO STREAMING AVAILABILITY OF DATA FOR STREAMING, SPECIFICATION OF DATA FOR STREAMING, SPECIFICATION OF METHOD OF DATA CONVERSION FOR STREAMING
REMOTE REPRODUCTION IN NETWORK	OK/NG	SPECIFICATION OF DEVICE SUBJECT TO REMOTE REPRODUCTION
PROCESSING TO BE EXECUTED WHEN BOUND STATUS IS CLEARED	VALUE	IMMEDIATE INVALIDATION, INVALIDATION AFTER CERTAIN PERIOD, OR DELETION OF COPY
502 REPRODUCTION OF DOWNLOAD DATA	VALUE (DATA TYPE)	SPECIFICATION OF METHOD OF ACQUIRING DOWNLOAD DATA, DOWNLOAD SERVER
503 INFORMATION FOR ACQUIRING OPERATION CONTROL INFORMATION FROM SERVER	VALUE	SPECIFICATION OF SERVER
USER-DEFINED INFORMATION	UNIQUELY DEFINED BY CONTENT OWNER	UNIQUELY DEFINED BY CONTENT OWNER

Inventor(s): Takashima et al.
INFORMATION PROCESSING APPARATUS, INFORMATION RECORDING MEDIUM, INFORMATION PROCESSING METHOD...
Filed February 7, 2006; Atty. Docket No. 112857-520

FIG. 24

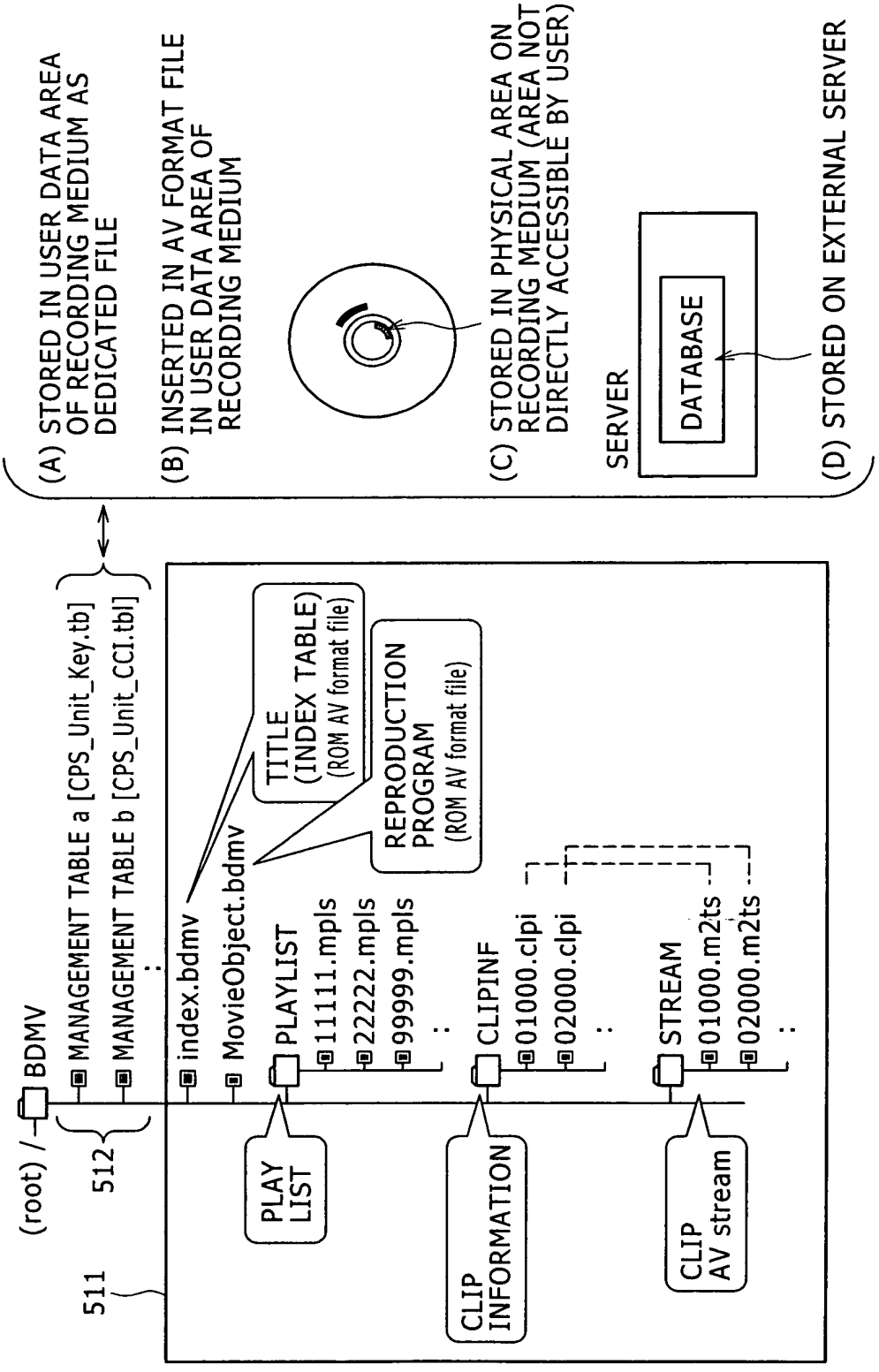

(A) STORED IN USER DATA AREA OF RECORDING MEDIUM AS DEDICATED FILE
(B) INSERTED IN AV FORMAT FILE IN USER DATA AREA OF RECORDING MEDIUM
(C) STORED IN PHYSICAL AREA ON RECORDING MEDIUM (AREA NOT DIRECTLY ACCESSIBLE BY USER)
SERVER
DATABASE
(D) STORED ON EXTERNAL SERVER
(root) /
BDMV
MANAGEMENT TABLE a [CPS_Unit_Key.tb]
MANAGEMENT TABLE b [CPS_Unit_CCI.tbl]
512
511
index.bdmv
MovieObject.bdmv
TITLE (INDEX TABLE) (ROM AV format file)
REPRODUCTION PROGRAM (ROM AV format file)
PLAYLIST
11111.mpls
22222.mpls
99999.mpls
CLIPINF
01000.clpi
02000.clpi
STREAM
01000.m2ts
02000.m2ts
PLAY LIST
CLIP INFORMATION
CLIP AV stream

FIG. 25

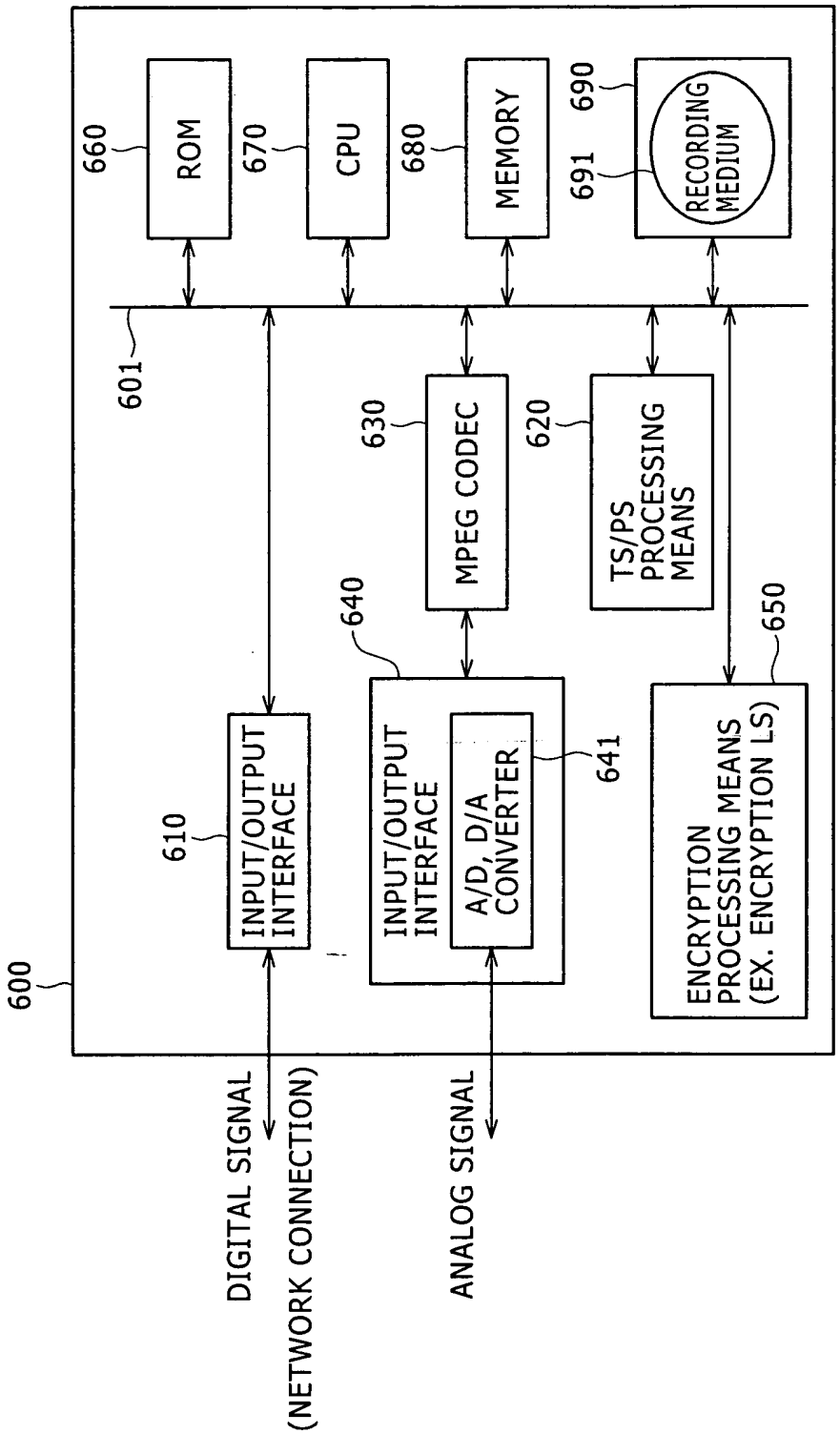
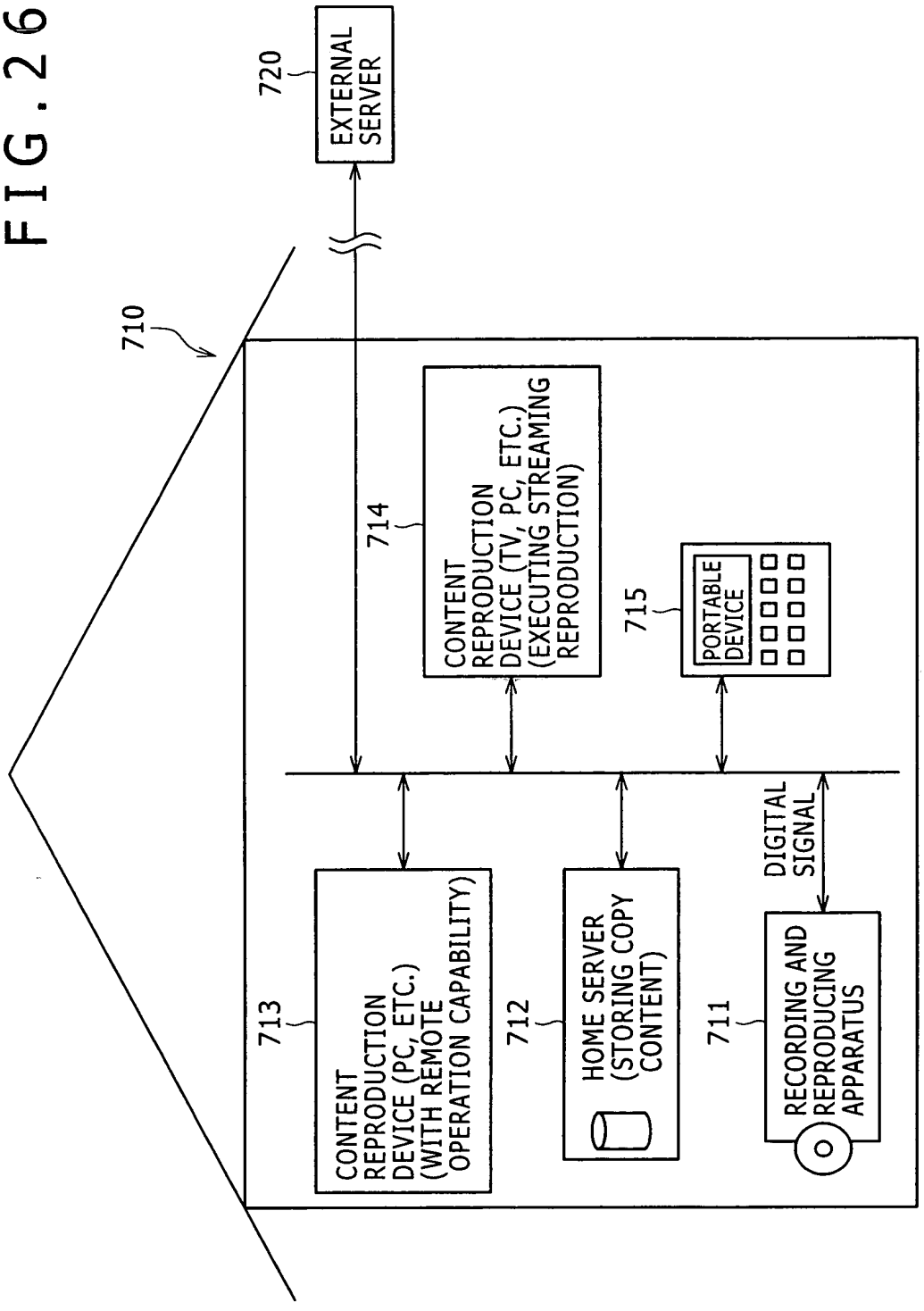

600
660
ROM
670
CPU
680
MEMORY
690
691
RECORDING MEDIUM
601
630
MPEG CODEC
620
TS/PS PROCESSING MEANS
640
650
610
INPUT/OUTPUT INTERFACE
INPUT/OUTPUT INTERFACE
A/D, D/A CONVERTER
641
ENCRYPTION PROCESSING MEANS (EX. ENCRYPTION LS)
DIGITAL SIGNAL
(NETWORK CONNECTION)
ANALOG SIGNAL

FIG. 26


720
EXTERNAL SERVER
710
714
CONTENT REPRODUCTION DEVICE (TV, PC, ETC.) (EXECUTING STREAMING REPRODUCTION)
715
PORTABLE DEVICE
713
CONTENT REPRODUCTION DEVICE (PC, ETC.) (WITH REMOTE OPERATION CAPABILITY)
712
HOME SERVER (STORING COPY CONTENT)
711
RECORDING AND REPRODUCING APPARATUS
DIGITAL SIGNAL

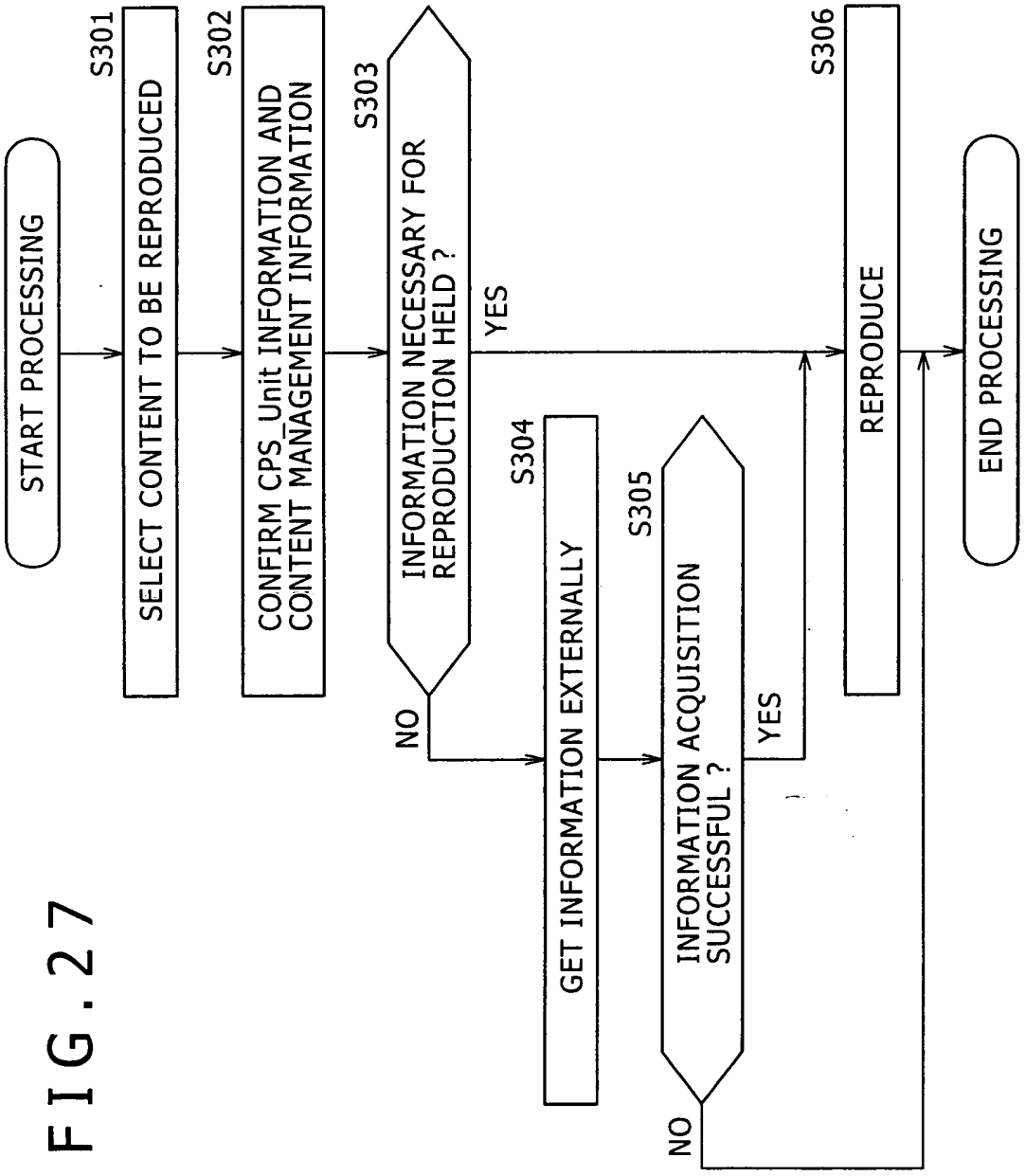

START PROCESSING
S301
SELECT CONTENT TO BE REPRODUCED
S302
CONFIRM CPS_Unit INFORMATION AND CONTENT MANAGEMENT INFORMATION
S303
INFORMATION NECESSARY FOR REPRODUCTION HELD ?
YES
NO
S304
GET INFORMATION EXTERNALLY
S305
INFORMATION ACQUISITION SUCCESSFUL ?
YES
NO
S306
REPRODUCE
END PROCESSING

FIG. 27

FIG. 28

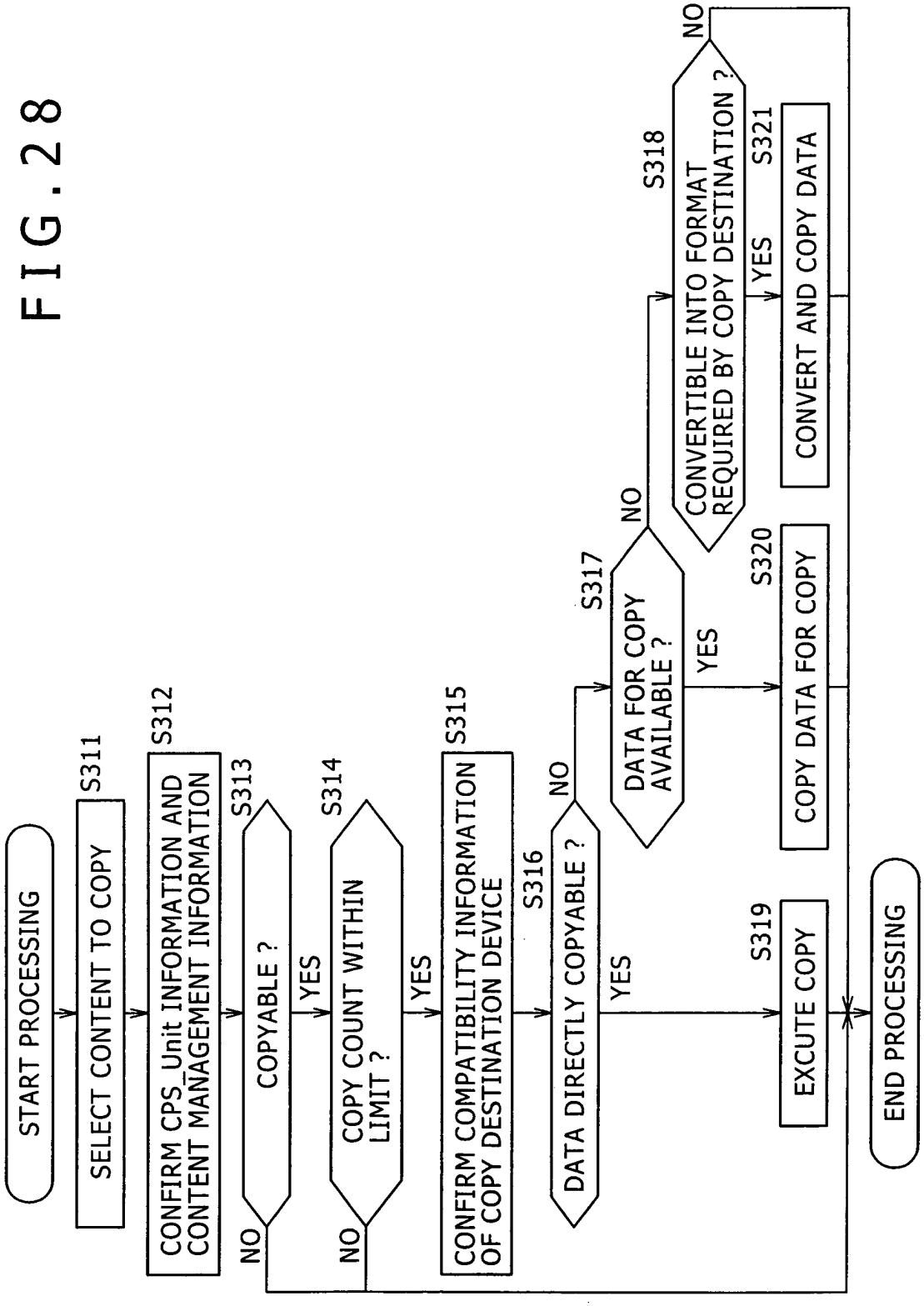

START PROCESSING
S311
SELECT CONTENT TO COPY
S312
CONFIRM CPS_Unit INFORMATION AND CONTENT MANAGEMENT INFORMATION
S313
COPYABLE ?
YES
NO
S314
COPY COUNT WITHIN LIMIT ?
YES
NO
S315
CONFIRM COMPATIBILITY INFORMATION OF COPY DESTINATION DEVICE
S316
DATA DIRECTLY COPYABLE ?
YES
NO
S317
DATA FOR COPY AVAILABLE ?
YES
NO
S318
CONVERTIBLE INTO FORMAT REQUIRED BY COPY DESTINATION ?
YES
NO
S319
EXCUTE COPY
S320
COPY DATA FOR COPY
S321
CONVERT AND COPY DATA
END PROCESSING

FIG. 29

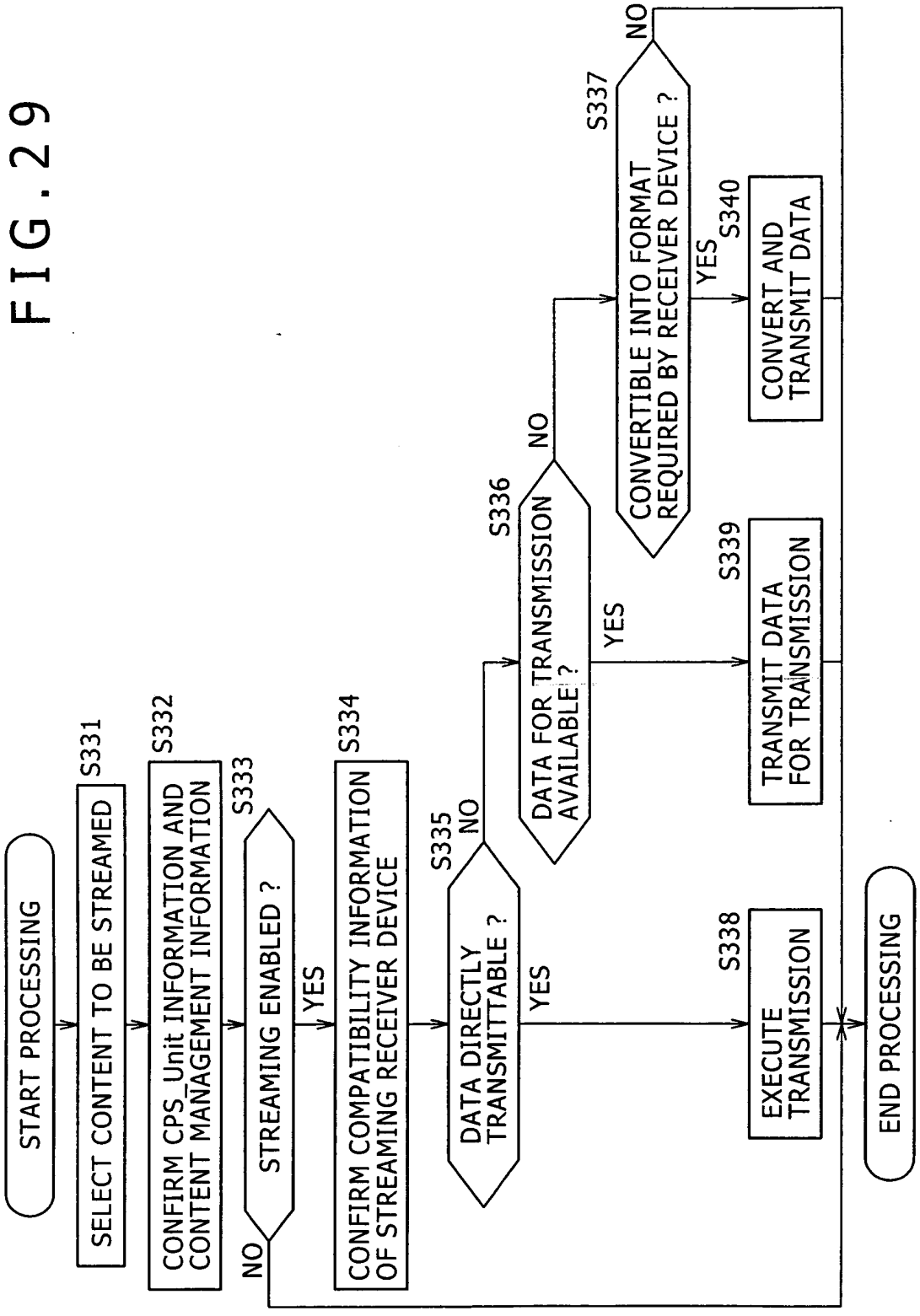

START PROCESSING
SELECT CONTENT TO BE STREAMED
S331
CONFIRM CPS_Unit INFORMATION AND CONTENT MANAGEMENT INFORMATION
S332
STREAMING ENABLED ?
S333
NO
YES
CONFIRM COMPATIBILITY INFORMATION OF STREAMING RECEIVER DEVICE
S334
DATA DIRECTLY TRANSMITTABLE ?
S335
NO
YES
DATA FOR TRANSMISSION AVAILABLE ?
S336
NO
YES
CONVERTIBLE INTO FORMAT REQUIRED BY RECEIVER DEVICE ?
S337
NO
YES
CONVERT AND TRANSMIT DATA
S340
TRANSMIT DATA FOR TRANSMISSION
S339
EXECUTE TRANSMISSION
S338
END PROCESSING

FIG. 30

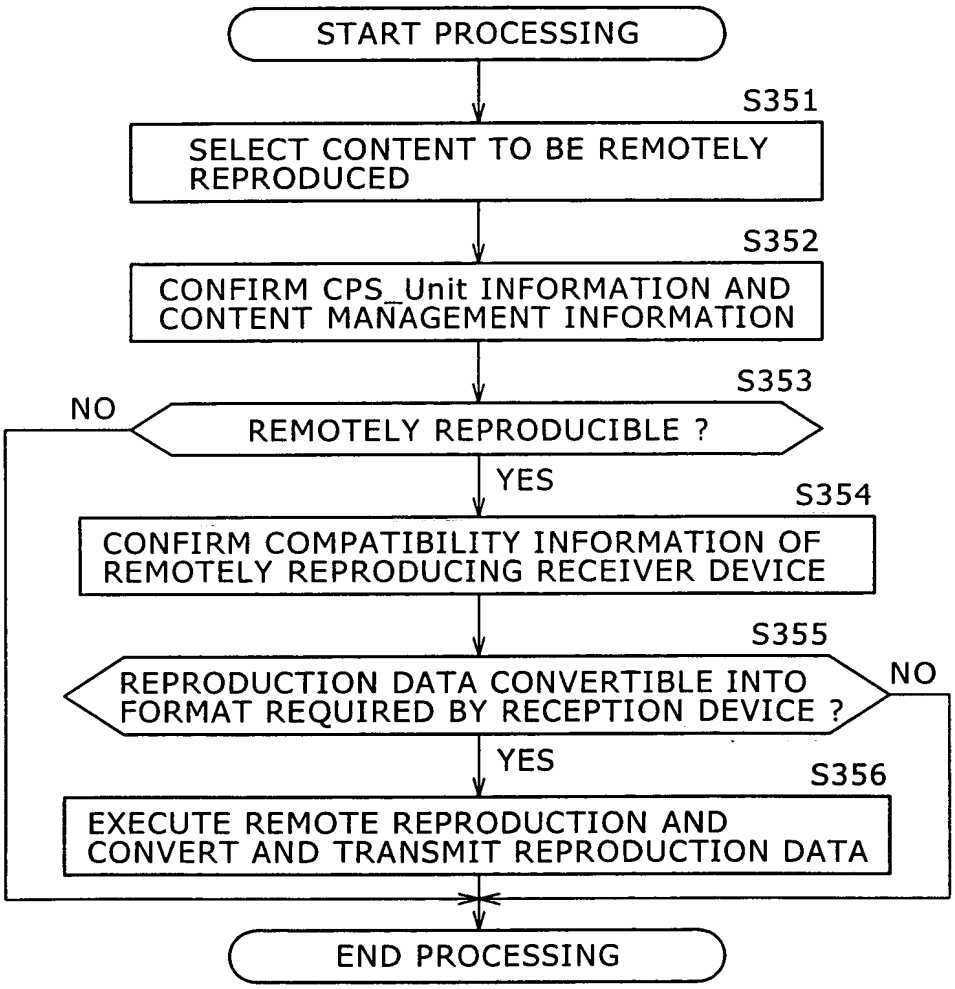

START PROCESSING
S351
SELECT CONTENT TO BE REMOTELY REPRODUCED
S352
CONFIRM CPS_Unit INFORMATION AND CONTENT MANAGEMENT INFORMATION
S353
NO
REMOTELY REPRODUCIBLE ?
YES
S354
CONFIRM COMPATIBILITY INFORMATION OF REMOTELY REPRODUCING RECEIVER DEVICE
S355
REPRODUCTION DATA CONVERTIBLE INTO FORMAT REQUIRED BY RECEPTION DEVICE ?
NO
YES
S356
EXECUTE REMOTE REPRODUCTION AND CONVERT AND TRANSMIT REPRODUCTION DATA
END PROCESSING

FIG. 31

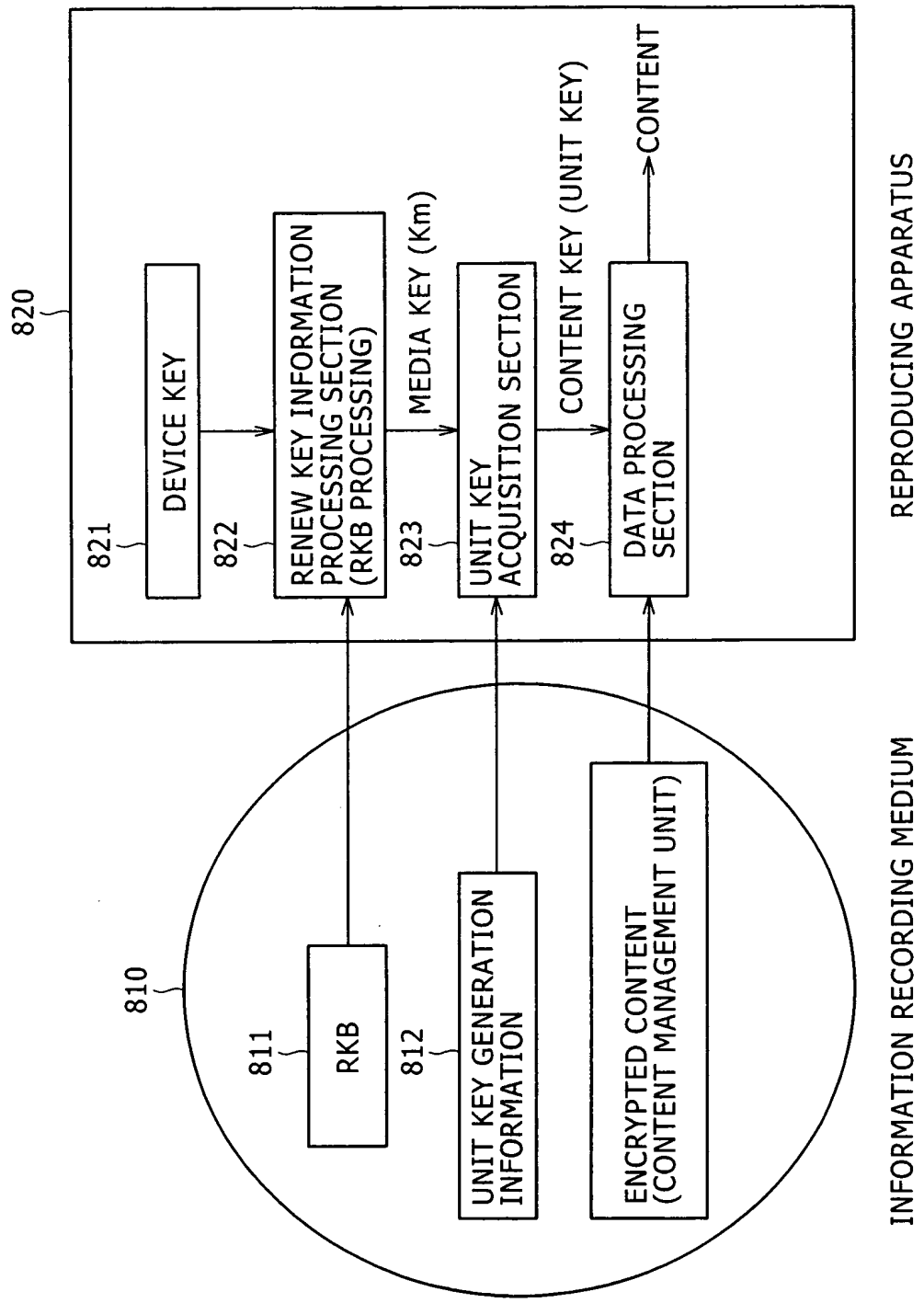

820
821
DEVICE KEY
822
RENEW KEY INFORMATION PROCESSING SECTION (RKB PROCESSING)
MEDIA KEY (Km)
823
UNIT KEY ACQUISITION SECTION
CONTENT KEY (UNIT KEY)
824
DATA PROCESSING SECTION
CONTENT
REPRODUCING APPARATUS
810
811
RKB
812
UNIT KEY GENERATION INFORMATION
ENCRYPTED CONTENT (CONTENT MANAGEMENT UNIT)
INFORMATION RECORDING MEDIUM

FIG. 32

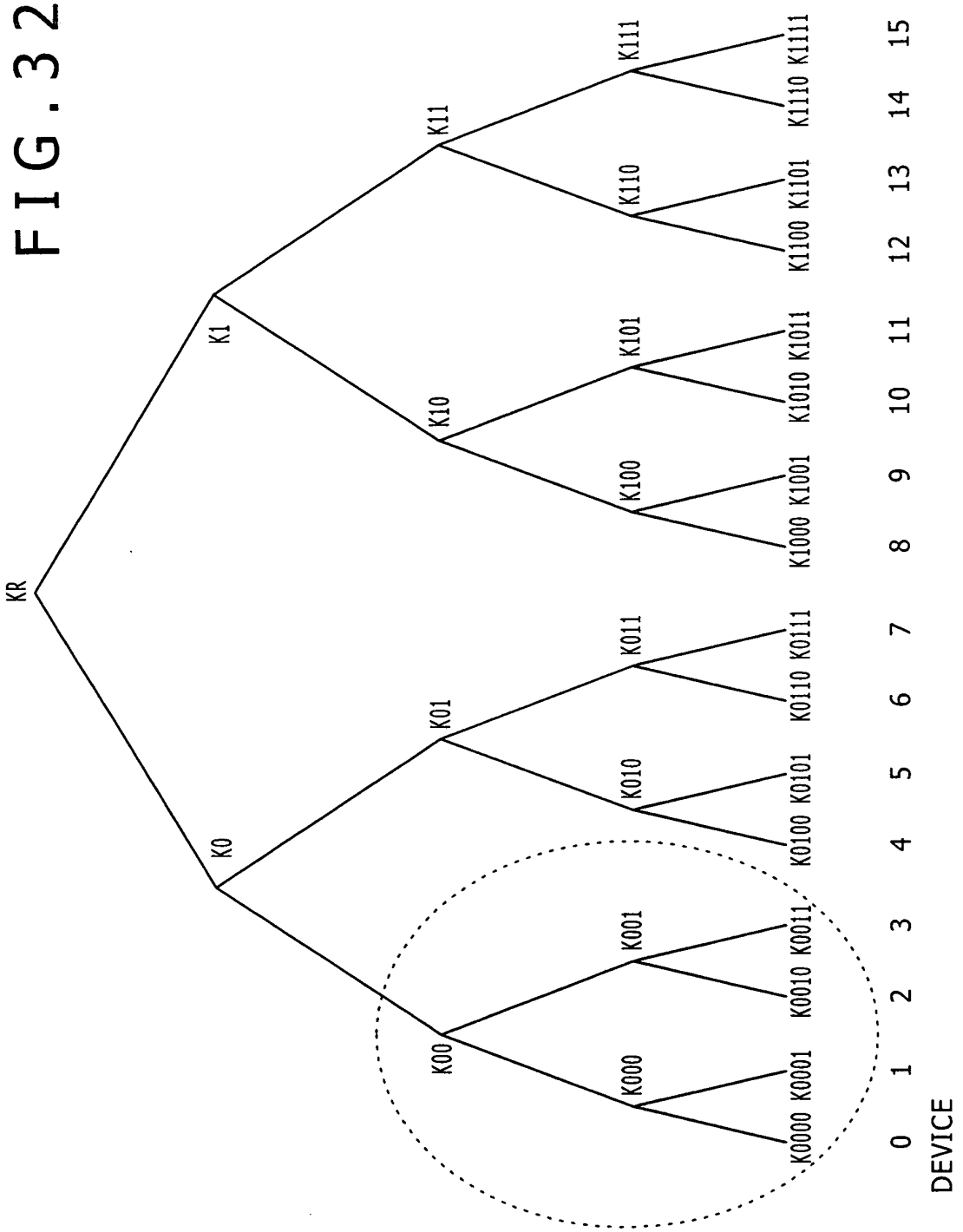

KR
K0
K1
K00
K01
K10
K11
K000
K001
K010
K011
K100
K101
K110
K111
K0000
K0001
K0010
K0011
K0100
K0101
K0110
K0111
K1000
K1001
K1010
K1011
K1100
K1101
K1110
K1111
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
DEVICE

FIG. 33

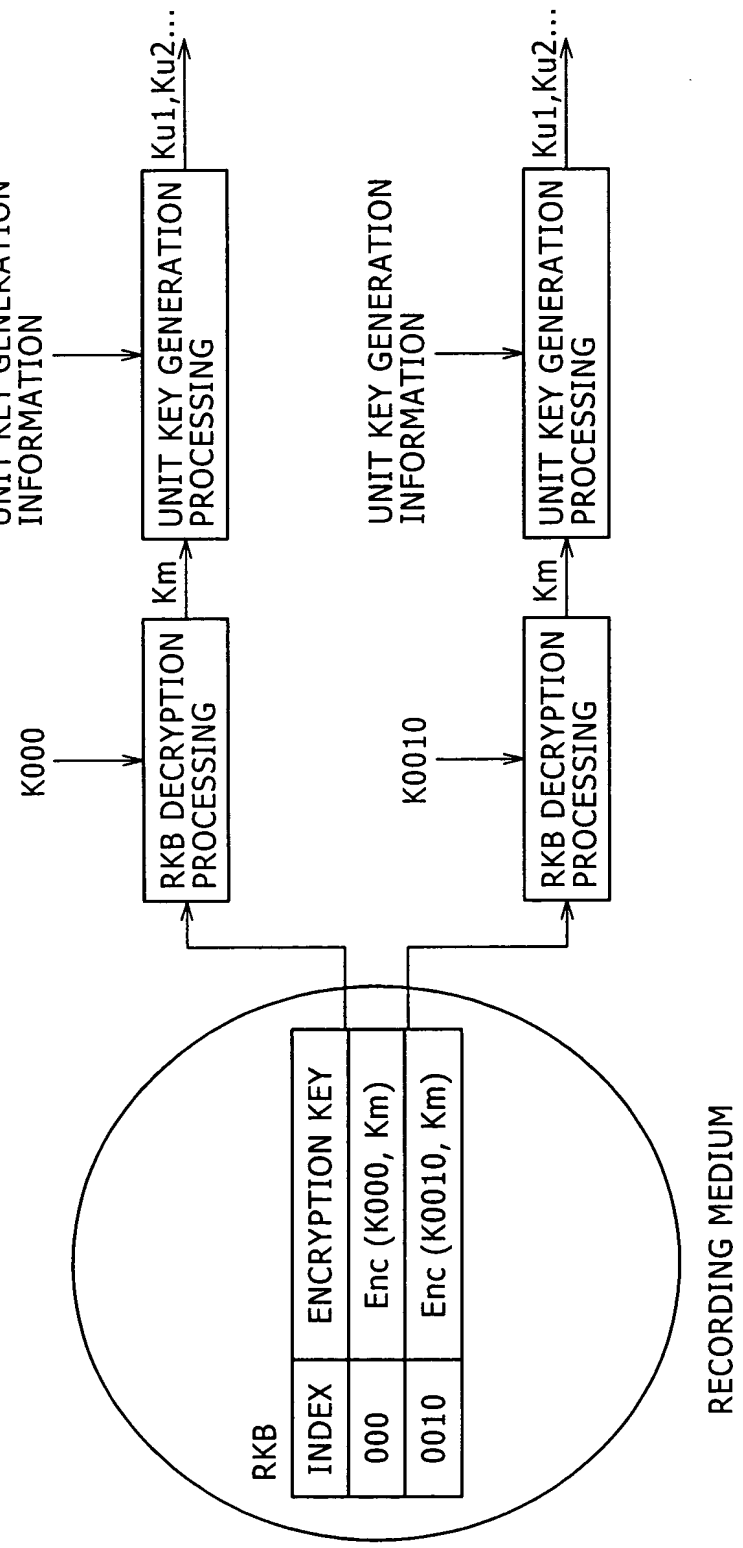

K000
RKB DECRYPTION PROCESSING
Km
UNIT KEY GENERATION INFORMATION
UNIT KEY GENERATION PROCESSING
Ku1,Ku2...
K0010
RKB DECRYPTION PROCESSING
Km
UNIT KEY GENERATION INFORMATION
UNIT KEY GENERATION PROCESSING
Ku1,Ku2...
RKB
INDEX
ENCRYPTION KEY
000
Enc (K000, Km)
0010
Enc (K0010, Km)
RECORDING MEDIUM

FIG. 34

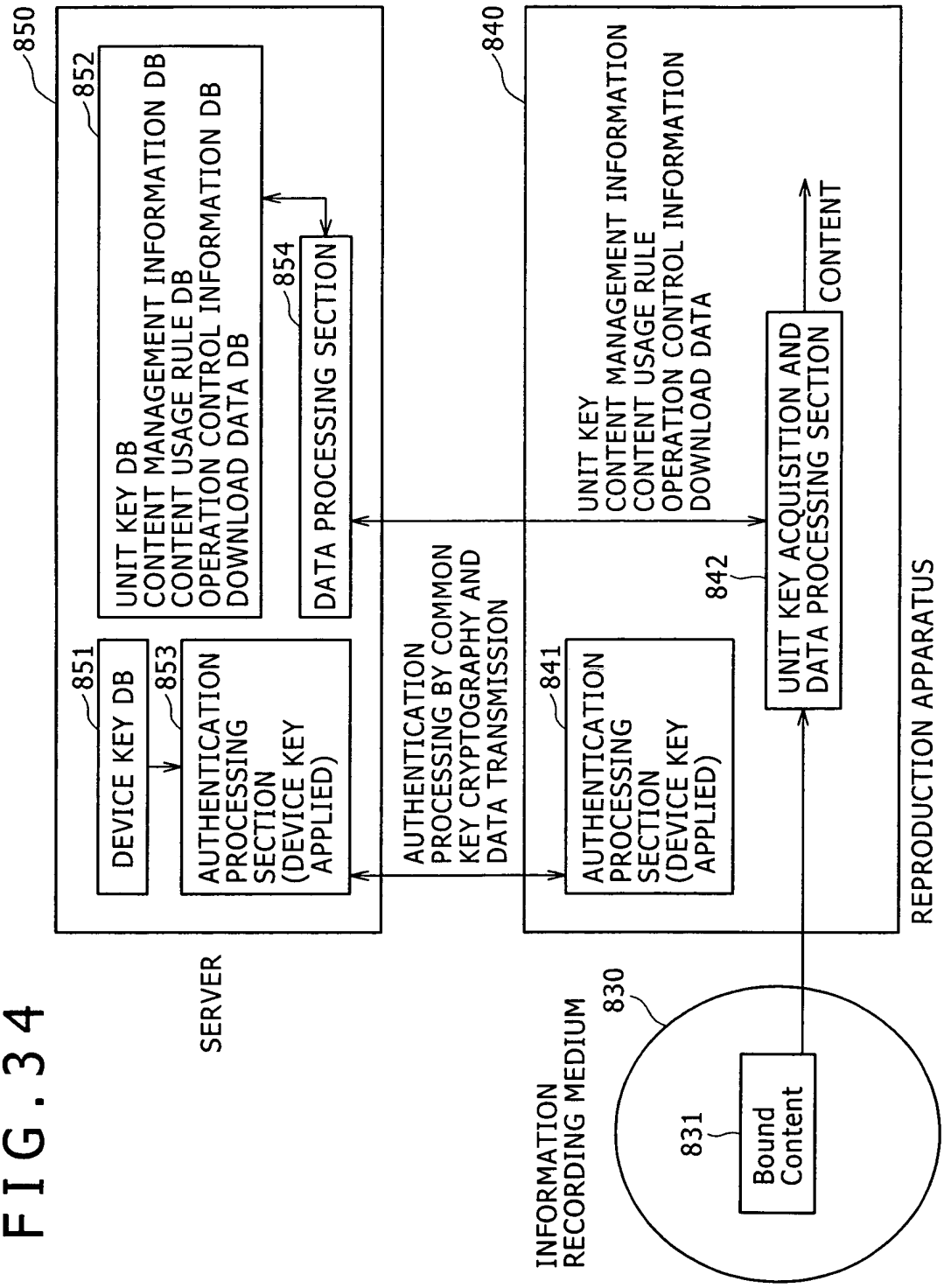

850
852
UNIT KEY DB
CONTENT MANAGEMENT INFORMATION DB
CONTENT USAGE RULE DB
OPERATION CONTROL INFORMATION DB
DOWNLOAD DATA DB
854
DATA PROCESSING SECTION
851
DEVICE KEY DB
853
AUTHENTICATION PROCESSING SECTION (DEVICE KEY APPLIED)
SERVER
AUTHENTICATION PROCESSING BY COMMON KEY CRYPTOGRAPHY AND DATA TRANSMISSION
840
UNIT KEY
CONTENT MANAGEMENT INFORMATION
CONTENT USAGE RULE
OPERATION CONTROL INFORMATION
DOWNLOAD DATA
841
AUTHENTICATION PROCESSING SECTION (DEVICE KEY APPLIED)
842
UNIT KEY ACQUISITION AND DATA PROCESSING SECTION
CONTENT
REPRODUCTION APPARATUS
INFORMATION RECORDING MEDIUM
830
831
Bound Content

FIG. 35

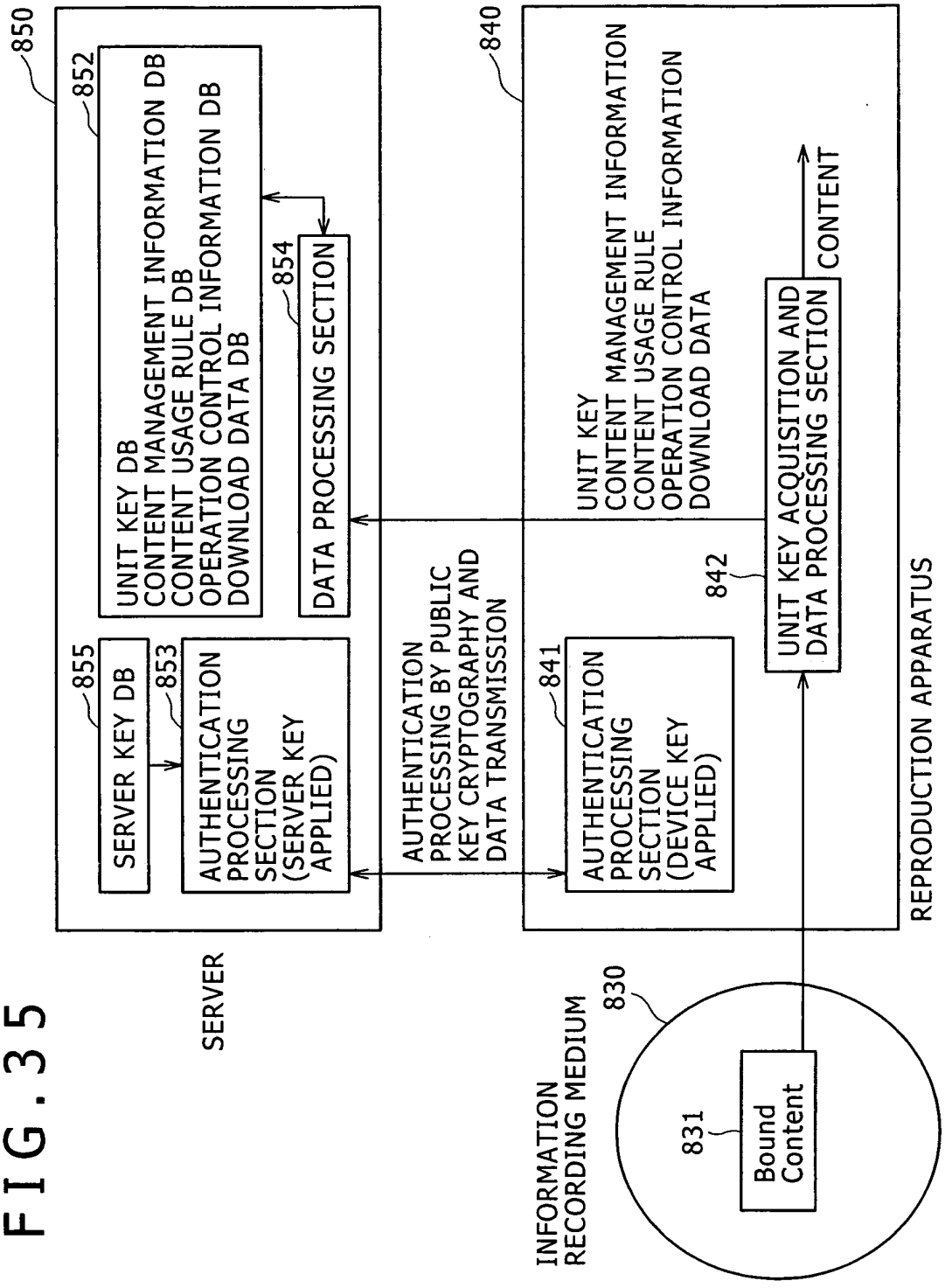

850
852
UNIT KEY DB
CONTENT MANAGEMENT INFORMATION DB
CONTENT USAGE RULE DB
OPERATION CONTROL INFORMATION DB
DOWNLOAD DATA DB
854
DATA PROCESSING SECTION
855
SERVER KEY DB
853
AUTHENTICATION PROCESSING SECTION (SERVER KEY APPLIED)
SERVER
AUTHENTICATION PROCESSING BY PUBLIC KEY CRYPTOGRAPHY AND DATA TRANSMISSION
840
UNIT KEY
CONTENT MANAGEMENT INFORMATION
CONTENT USAGE RULE
OPERATION CONTROL INFORMATION
DOWNLOAD DATA
841
AUTHENTICATION PROCESSING SECTION (DEVICE KEY APPLIED)
842
UNIT KEY ACQUISITION AND DATA PROCESSING SECTION
CONTENT
REPRODUCTION APPARATUS
INFORMATION RECORDING MEDIUM
830
831
Bound Content

FIG. 36

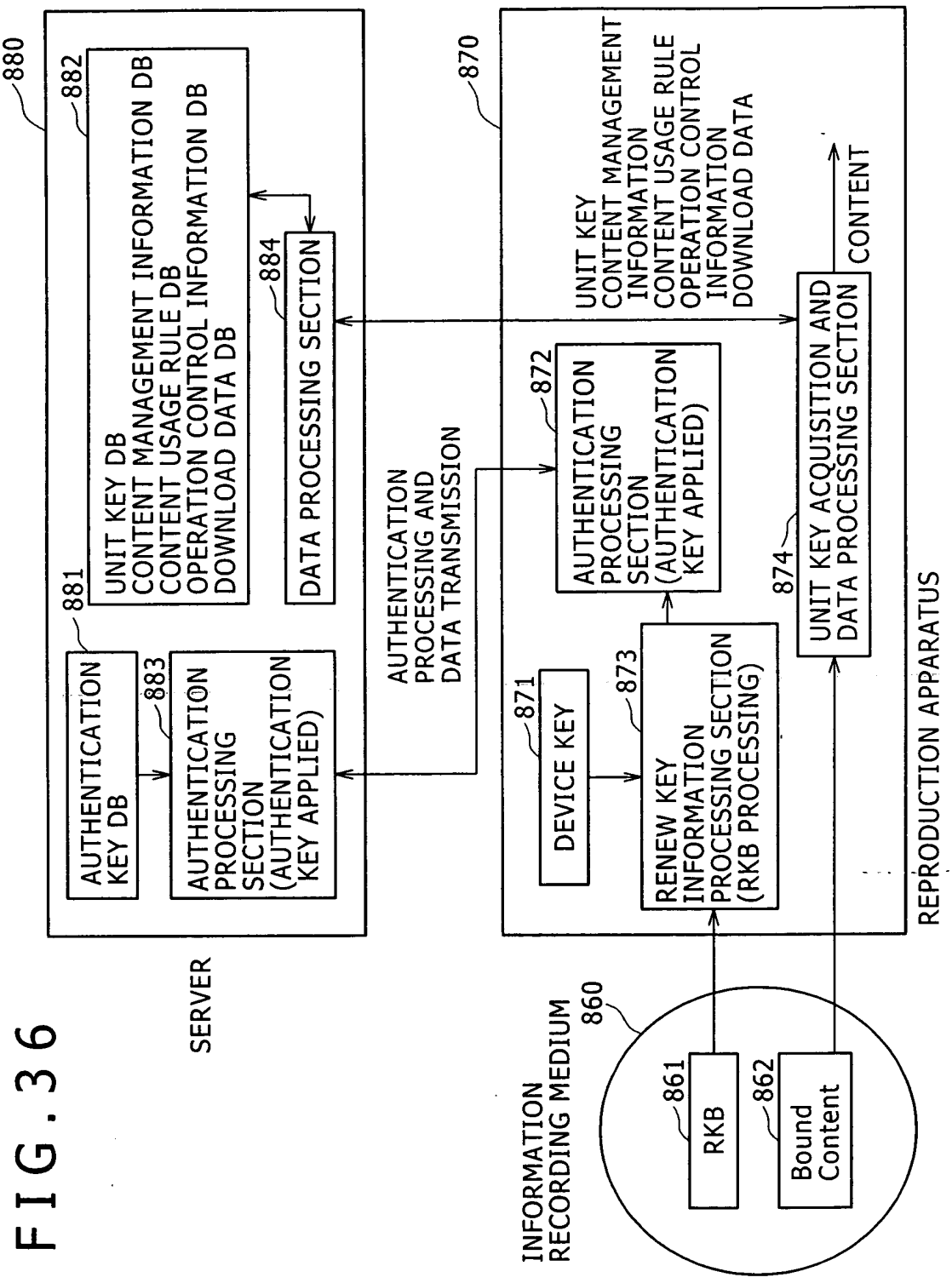
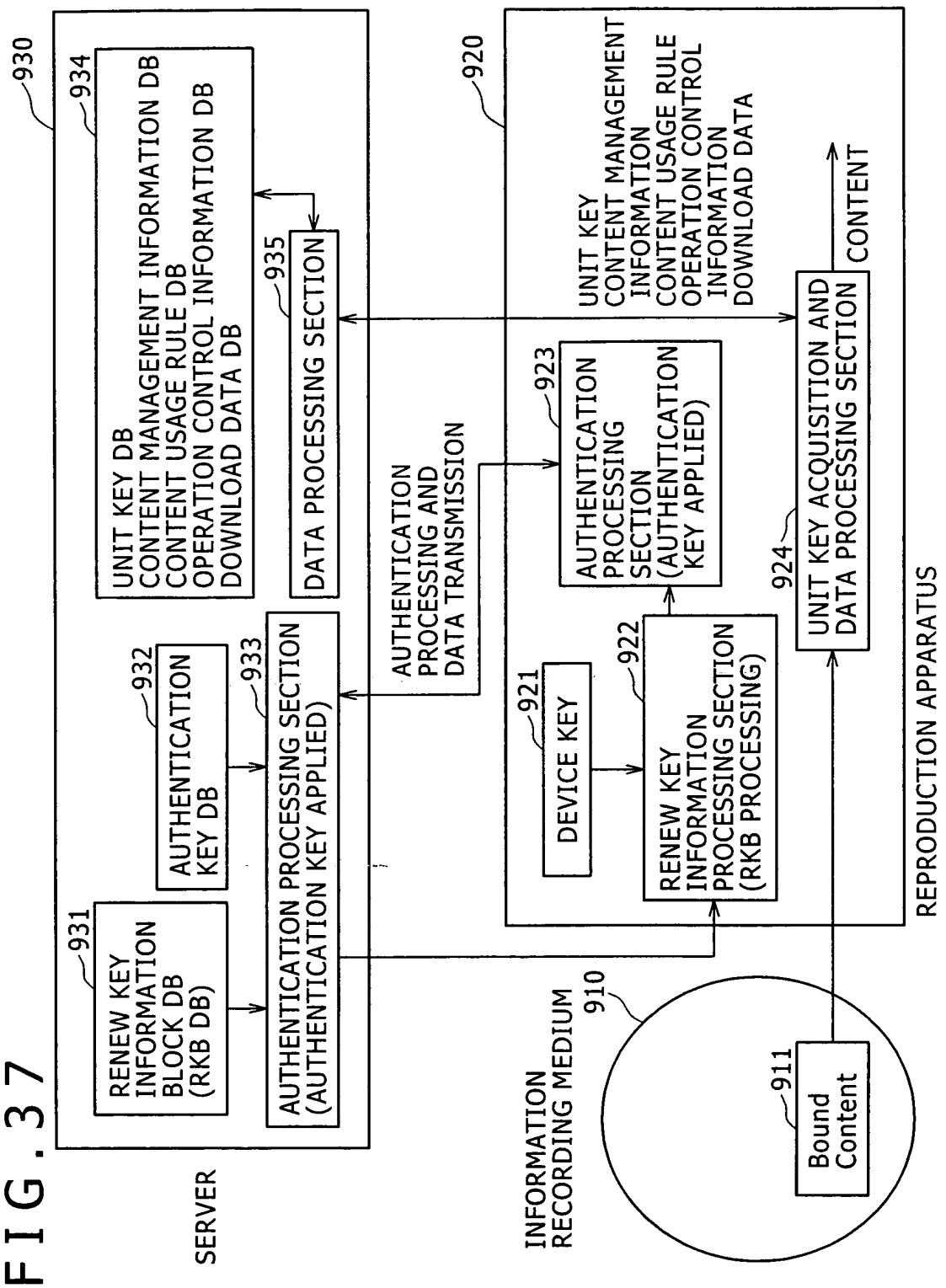

880
882
UNIT KEY DB
CONTENT MANAGEMENT INFORMATION DB
CONTENT USAGE RULE DB
OPERATION CONTROL INFORMATION DB
DOWNLOAD DATA DB
884
DATA PROCESSING SECTION
881
AUTHENTICATION KEY DB
883
AUTHENTICATION PROCESSING SECTION (AUTHENTICATION KEY APPLIED)
SERVER
AUTHENTICATION PROCESSING AND DATA TRANSMISSION
870
UNIT KEY
CONTENT MANAGEMENT INFORMATION
CONTENT USAGE RULE
OPERATION CONTROL INFORMATION
DOWNLOAD DATA
872
AUTHENTICATION PROCESSING SECTION (AUTHENTICATION KEY APPLIED)
871
DEVICE KEY
873
RENEW KEY INFORMATION PROCESSING SECTION (RKB PROCESSING)
874
UNIT KEY ACQUISITION AND DATA PROCESSING SECTION
CONTENT
REPRODUCTION APPARATUS
INFORMATION RECORDING MEDIUM
860
861
RKB
862
Bound Content

FIG. 37


930
SERVER
934
UNIT KEY DB
CONTENT MANAGEMENT INFORMATION DB
CONTENT USAGE RULE DB
OPERATION CONTROL INFORMATION DB
DOWNLOAD DATA DB
935
DATA PROCESSING SECTION
931
RENEW KEY INFORMATION BLOCK DB (RKB DB)
932
AUTHENTICATION KEY DB
933
AUTHENTICATION PROCESSING SECTION (AUTHENTICATION KEY APPLIED)
AUTHENTICATION PROCESSING AND DATA TRANSMISSION
920
UNIT KEY
CONTENT MANAGEMENT INFORMATION
CONTENT USAGE RULE OPERATION CONTROL INFORMATION
DOWNLOAD DATA
923
AUTHENTICATION PROCESSING SECTION (AUTHENTICATION KEY APPLIED)
921
DEVICE KEY
922
RENEW KEY INFORMATION PROCESSING SECTION (RKB PROCESSING)
924
UNIT KEY ACQUISITION AND DATA PROCESSING SECTION
CONTENT
REPRODUCTION APPARATUS
INFORMATION RECORDING MEDIUM
910
911
Bound Content